

# AMERICAN





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## COMING

A forest wilderness is on the march in the Southern Appalachians. In a vigorous advance it is reoccupying thousands of acres wrested from it by settlers during the last century. Thus the tables are being turned—for America has always seen man invading and pushing back the wilderness. In the September issue Charles R. Ross, a newcomer to AMERICAN FORESTS, tells of this unusual movement in "Wilderness Resurgent"—a truly fine story.

Alfred M. Bailey and Robert J. Niedrach have just returned from another of their dramatic camera expeditions and report on their findings—and experiences—in "Filming the Golden Eagle." W. C. Lowdermilk will also be back in the September issue, concluding his series on his soil studies in North Africa with a discussion of the little waters of this ancient land. There will also be "Primitive Forests—Their Geologic Record," by Allan F. Matthews and "Looking Backward on Logging," by Newell L. Wright.

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# CONTENTS

August, 1939

NUMBER 8

# AMERICAN FORESTS

Page	
386	THE READERS' FORUM
389	THE EDITOR'S LOG
391	I WANTED TO HERD CATTLE By Grace Ernestine Ray
395	WHAT IS YOUR FAVORITE TREE? By Henry Clepper
398	TREASURES OF THE HIGH SIERRA By Ethel Severson
400	CHICAGO'S FORESTERS FIGHT FIRE By Roberts Mann
403	FOREST FIRE Poem by Glory E. Scott
404	WILDLIFE IN GOTHAM By Lorine Letcher Butler
407	FOOTPRINTS OF ROMAN AGRICULTURE By W. C. Lowdermilk
410	BAKER RIVER SALMON TAKE A RIDE By Edward P. Cliff
412	"THE COUNTESS" By Sam Mims
413	EDITORIALS Conservation Team-Work Forest Protection in Alaska
414	WHEN IT RAINED SALT WATER By A. E. Moss
416	SUBSISTENCE FIRE TOWERS By William F. Jacobs
422	YOUR SHADE TREES—Pruning Practices By A. Robert Thompson
424	CONSERVATION CALENDAR
425	FORESTRY IN CONGRESS By G. H. Collingwood
426	NEW PUBLICATIONS
432	"WHO'S WHO" AMONG THE AUTHORS

The Editors are not responsible for loss or injury of manuscripts and photographs while in their possession or in transit. All manuscripts should be accompanied by return postage. The Editors are not responsible for views expressed in signed articles . . . . Notice of change of address for AMERICAN FORESTS should be received by the tenth of the month preceding issue.

Member A. B. C.  
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# READERS' FORUM

## FROM THE POSTMASTER GENERAL

SIR: I am in receipt of your letter of May 27, transmitting the poster stamps printed as a part of your campaign to prevent forest fires.

Your organization is doing a splendid work in educating the people so that these conflagrations which destroy so much of our valuable timber may be prevented, and I wish to congratulate you upon the issuance of these attractive stamps. They should be very effective in your campaign.—*James A. Farley*, Postmaster General, Washington, D. C.

## METAL FIRE STAMPS

SIR: I think the forest fire protection stamp is impressive and beautiful as well. The thought occurs to me that much good could be accomplished were a stamp of its kind to be turned out in metal.

I feel certain that those interested in forestry as well as the farming element of the country would be only too happy to furnish labor to affix signs of its kind on trees or other places in the forest at least ten feet from the ground. I suggest this height in order that those who have nothing else to do would not interfere with them.

It would seem to me the federal government should stand the expense for the metal signs, conditioned upon those receiving them furnishing the labor, and should the government not be willing to stand the expense in its entirety, a small tax on the lumbermen of the country should follow.

I think the signs would be so attractive that most everyone passing through the woods or on the highways would be sure to observe them.—*Frank P. Furlong*, Hartford, Connecticut.

## MORE ON THE POPLAR

SIR: Paul Hosmer's article, "Sustained Yield a la Poplar" (July issue), sounds facetious and not very accurate, but P. W. Ayres told me years ago that poplar is one of the best trees for pulp. I have often used it for lumber. And a professor at Columbia has been breeding poplar hybrids to secure quicker growth.

One question I want to know is whether shoots from a poplar stump are likely to have heart rot, making them unsuitable for lumber, and whether this makes them unsuitable for pulp. I recently cut a small poplar, which was a stump sprout about ten years old. The top of the old stump had completely healed over, but the heart of the log has a brownish stain.

If poplar stump sprouts are good for pulp then poplar would be a fine crop for this state, for it gives you a ten year financial rotation, and comes back quickly if some city dweller burns you out.

In the colder sections of the country poplar farming could be combined with

beaver farming, the beavers eating the tops while the logs go to the pulp mill. That heart rot question seems to be the key to the whole business.—*James R. Randolph*, Kingston, Rhode Island.

## CONSERVATION THINKING

SIR: I was thoroughly disgusted with your issue devoted entirely to propaganda against all use of fire. This covered the harm that fires can do to the forests from every conceivable angle, but not one word as to the good it can be made to do or of its place in ecology.

After reading this issue I was about at the point of resigning my membership when the next issue came along and I found one of the finest articles it has ever been my pleasure to read. I refer to "The Farmer as a Conservationist," by Aldo Leopold.

In my opinion this is the type of articles we need to straighten out conservation thinking, and I wish it were possible for a copy to be placed in the hands of every thinking man, woman, and school child in this country.

Isn't it possible that some of the organizations can reproduce this article as a separate and give it the widest possible distribution?—*Herbert L. Stoddard*, director, Cooperative Quail Study Association, Thomasville, Georgia.

## THE "FOREST MANAGER"

SIR: I wish to acknowledge receipt of the ten copies of The American Forestry Association's new book "The Forest Manager."

I have gone over this book carefully—a part of it a second time—and I wish to say that I feel that it would be worth much to many North Carolina farmers if they would read it and give thought to its contents. The third chapter (Forest Soil and its Treatment) is of especial interest. I would consider this chapter alone to be worth the price of the book.

I would like to see this book put in the libraries of all the agricultural high schools of North Carolina, and I am taking the liberty of calling it to the attention of T. E. Brown, director of Vocational Education, also to J. K. Coggin who has charge of the preparation of the subject matter material for the vocational schools.—*R. W. Graeber*, secretary, The North Carolina Forestry Association, Raleigh, North Carolina.

## AUSTRALIA'S FIRE TRAGEDY

SIR: "We had an exceptionally bad fire year in 1939, as you may have seen by your press. The winter of 1938 was exceptionally dry and conditions were most menacing. Unfortunately the menace materialized when a period of high north

winds, temperatures of 114 degrees, and humidities of four, commenced in early January. The fires reached such proportions that no human effort seemed to any avail. The intense heat caused a distillation of the essential oils in the eucalypts and these, mixing with the air and carried along by the raging winds, caused the air in these currents, especially in the valleys, to ignite. These flames could be seen sweeping along the bare ground where nothing of an inflammable nature existed.

"Under the circumstances it was exceedingly dangerous for men to be in the bush in line with the fires. Our service (Forests Commission of Victoria) lost less than four of its officers—all of them men of considerable experience.

"We had just to wait until rain fell before there was any chance whatever of dealing with the outbreak.

"The conflagration of 1939 seems to have resembled in area and intensity that of 1851 in what is still remembered as 'Black Friday.' It was, for us, a very tragic occurrence and exceedingly discouraging. One wonders how long it will be before the public develops a 'fire conscience' and takes reasonable precautions."—*W. W. Gay*, commissioner, Forests Commission of Victoria, Melbourne, Australia.

## GARDEN CLUBS CHAIRMAN

SIR: I wish to inform you that my successor has been appointed as chairman of Conservation, National Council of Garden Clubs. She is Mrs. Forest Hutton-locher, *Better Homes and Gardens*, Des Moines, Iowa. She is better known as Fae and is, as you know, an associate editor of the above magazine.

You will find her a well informed, enthusiastic conservationist and I wish for both of you an association as profitable and as agreeable as mine has been.—*Mrs. Kemble White*, Clarksburg, West Virginia.

## NATURE PICTURE CONTEST

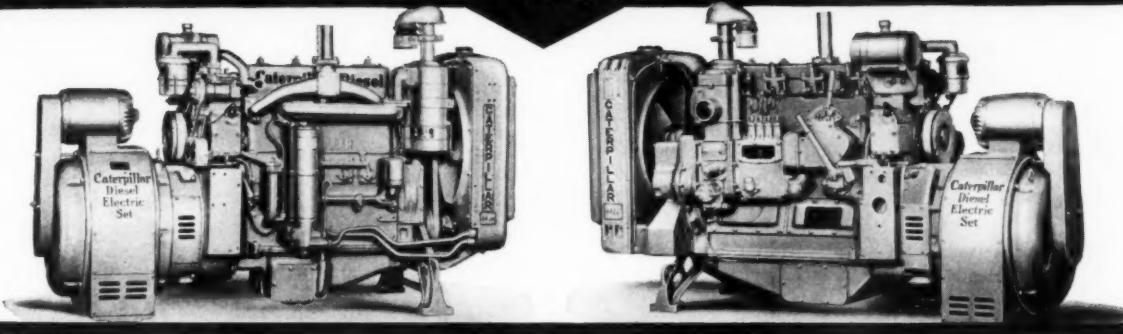
SIR: An exhibition of photographs with award of prizes will be held under the auspices of the New York State Nature Association from October 16 to 29. A first prize of \$20, a second prize of \$10, and a third prize of \$5 will be awarded to the pictures which best represent the spirit and beauty of wild birds and animals photographed in their natural environment.

For those interested, prints must be mounted on standard 16" x 20" mounts in such a way that the long dimension of the mount is vertical. The name and address of the exhibitor must be typed or printed on the back of each mount. All entries must be sent not later than October 7, 1939, to Miss Alice Morgan Wright, 393 State Street, Albany, New York.

The exhibition will be held in the galleries of The American Humane Association, 135 Washington Avenue, Albany.—*Miss Alice Morgan Wright*, Albany, New York.

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The Association's National Headquarters, 919 Seventeenth Street, Farragut Square, Washington, D. C.

■ The American Forestry Association is a national organization—educational in character. It is devoted to the protection and perpetuation of forests, trees and wildlife. It was the first nationally organized recognition in this country of the permanent need of forests as a

## THE ASSOCIATION

continuous source of raw wood and for the protection of our soil and water supply. Association activities seek to spread a wider knowledge of the country's natural resources to the end that they will be preserved by wise use.

More than half a century ago, serious men and women of vision protested the folly of allowing America's vast riches in the form of forests and other natural resources to continue to be destroyed. Recognizing the need of public education and action on a national scale, they organized The American Forestry Association. That was in September 1875 and from that date, the Association has been in continuous operation in the public service. Among its many educational activities is publication of the two magazines, *AMERICAN FORESTS* and *CONSERVATION*.

The Association was not conceived, nor is it operated for financial gain. Supported primarily by membership dues, its income over and above actual expenses is returned at once to extend the scope and field of its work. It is independent of Government affiliation or control, though supporting sound public programs for the progress of forestry, both state and national. Its work is administered and controlled by a rotating Board of Directors made up of individuals of national standing—both men and women thoroughly informed as to the nation's present-day conservation needs, equipped too through experience, ability and training to advance the Association's program. They serve entirely voluntarily, without remuneration of any sort.

A series of brief life sketches of the presidents of the Association from its inception has just been completed, and it is the purpose now to use this space in the magazine from month to month in presenting similar sketches of the members of the Board, believing that our members will be glad of this more intimate introduction to the governing Board, and that such recognition is due them because of their altruistic and devoted services.

## THE AMERICAN FORESTRY ASSOCIATION

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# The EDITOR'S LOG

component parts. Hereafter the CCC will be under the over-all supervision and direction of Paul V. McNutt, just appointed by President Roosevelt to head up the FSA.

And on the same date some five thousand officers of the Army Reserve Corps who have been serving the CCC as camp commanders and in other capacities were stripped of their Army uniforms and put into the drab green cloth of the CCC enrollee with only a brass button or two on their right sleeves to distinguish their positions of authority. Coupled with this loss of outward prestige was a general reduction in pay and War Department perquisites and a general coverage into the civilian federal service.

Neither of these changes have rested well with those in authority. It is known that Robert Fechner who has headed the Corps with distinction since its inception liked not at all the loss of Corps independence and felt so strongly about it that he offered his resignation to President Roosevelt. The President is reported to have refused to accept it and to have persuaded Mr. Fechner to remain as Director—temporarily at least.

Nor do the reserve officers like the curtailment of pay and glamour which attaches to the right to wear the Army uniform. Both they and the Army are wondering what effect this will have upon the morale of the enrollees, upon the discipline which reserve officers as civilians will be able to command and upon the class of reserve officers which the CCC hereafter will attract. Opinion generally is that there will be a general lowering in all three brackets.

The reserve officers, it would appear, have themselves and their past comrades in arms to thank for this unhappy situation. When the National Defense Act was pending in Congress this spring a veterans' lobby succeeded in having a rider attached to it giving reserve officers serving the CCC the same retirement and disability benefits as officers of the regular Army. President Roosevelt objected and asked Congress to rescind the amendment. When it did not, the President did his own rescinding by simply issuing an order terminating the active duty status of CCC reserve officers, which had the effect of continuing their employment as camp commanders, assistant commanders and aides but in civilian capacity and at civilian rates of pay.

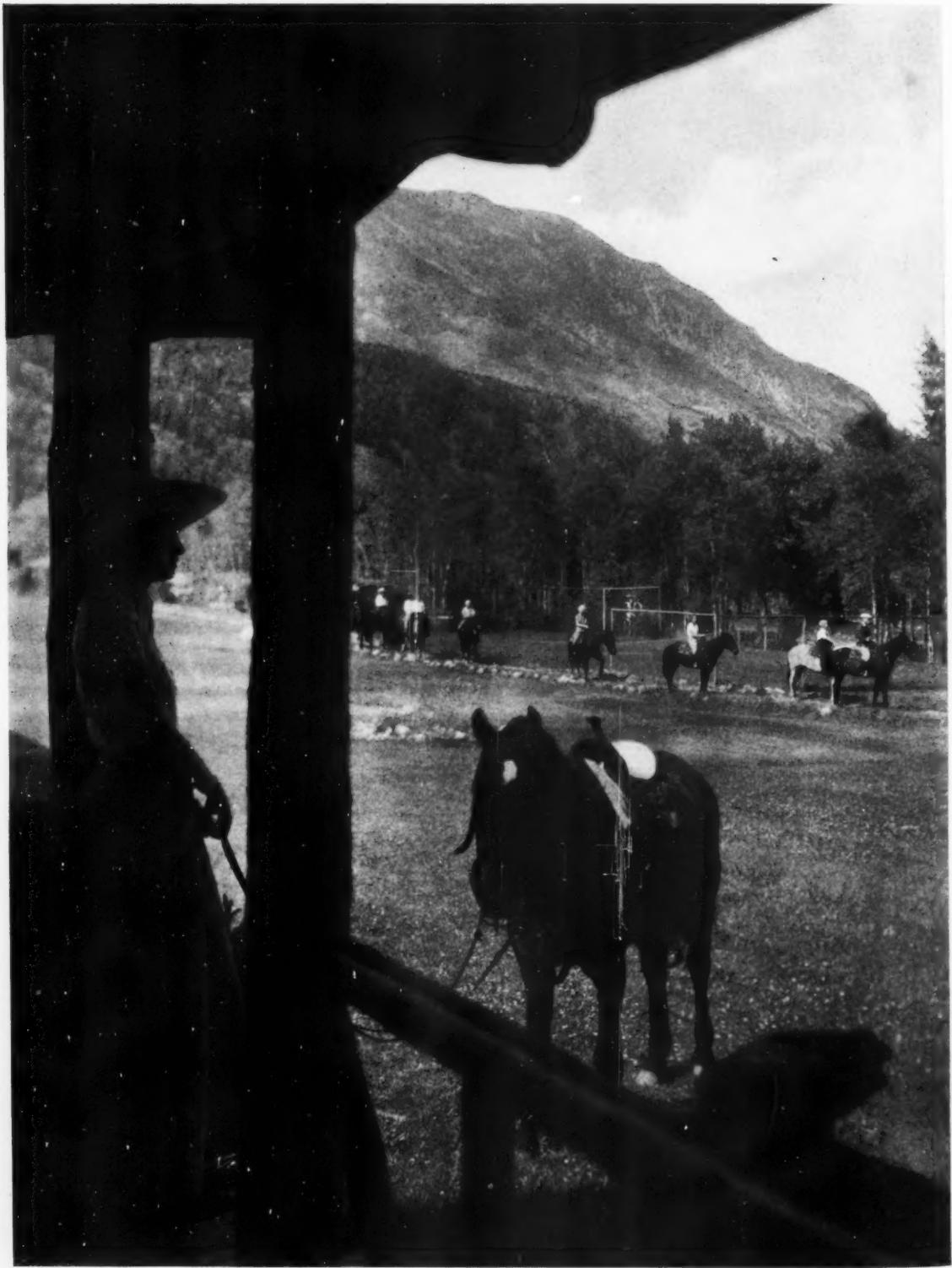
IF YOU would hold a looking glass to present day national park trends, read Congressman Bertrand W. Gearhart's remarks in the Congressional Record of June 20. Mr. Gearhart comes from California and is author of the bill to create a new national park embracing the famous Kings River Canyon. Much of the area involved is now in a national forest and the justification for making a national park is to preserve its scenic features by locking out commercial use and development. That is and always has been the purpose of national park making.

According to Mr. Gearhart, however, this long standing conception of national parks is all wrong. His modern version is that the creation of a national park does not permanently lock up or lock out anything. Even the grazing of sheep and cattle may be a preferred park activity. Speaking of his own bill, he says:

"A provision has been inserted in the proposed park bill (Kings Canyon) which will authorize the grazing permittees to graze within the new park as long as they desire to renew their permits, for life if that is their wish. So no livestock grazer, be he cattleman or sheepman, will lose anything which he now enjoys by reason of the creation of the proposed park. \* \* \* On the contrary, they will become vested with life permits, a special privilege that is enjoyed by few, if by any others at all."

That ought to win the grazing industry not only to the Kings Canyon proposal but to the proposition of turning all national forests into national parks!

*One Justice*  
Editor.



© Brown, St. Paul

Life on a western dude ranch is diverting, a wonderful holiday—  
even though it includes no cattle herding, round-ups, or branding

# I WANTED TO HERD CATTLE

By GRACE ERNESTINE RAY

IT WAS a heavy blow when I discovered that the western mountain dude ranch where I had registered was one of many such ranches which have no cattle, or only enough to supply milk, butter and beef for the larder. I had read in travel folders that "a dude ranch is one where cattle raising is combined with entertaining paying guests", and that a person may "mingle with the cowpunchers and take part in herding, branding and other activities". One enticing bulletin quoted a cowboy as having said:

"Yeah, we'd sure admire to have some help with the round-up!"

Having seen sun-baked Oklahoma in summer, I knew that because of the heat, the rattlesnakes, and black widow spiders, a cattle ranch is no place for a dude. But it had not occurred to me that a dude ranch is no place for a cow.

"In the heart of the dude ranch country, you may ride herd with the buckaroos," read the publicity. As I lived in Oklahoma, a beef-raising state, these remarks fitted in with my idea of a "ranch". There certainly would be lots of cattle around the place. I had forgotten that in California a ranch may be anything from a farmer's grape vineyard to a movie star's mansion.

So I had gone to the de luxe ranges expecting to obey the urge to drive somebody's cattle somewhere—an urge so strong that it suggested a throwback to unethical

ancestors, although it was just a reaction from teaching school.

I stopped at one of the smaller dude ranches that help entertain the herds of people who do what Horace Greeley suggested and go west—at least for the summer.

"How many head of cattle have you?" I eagerly asked Bill, owner of the ranch.

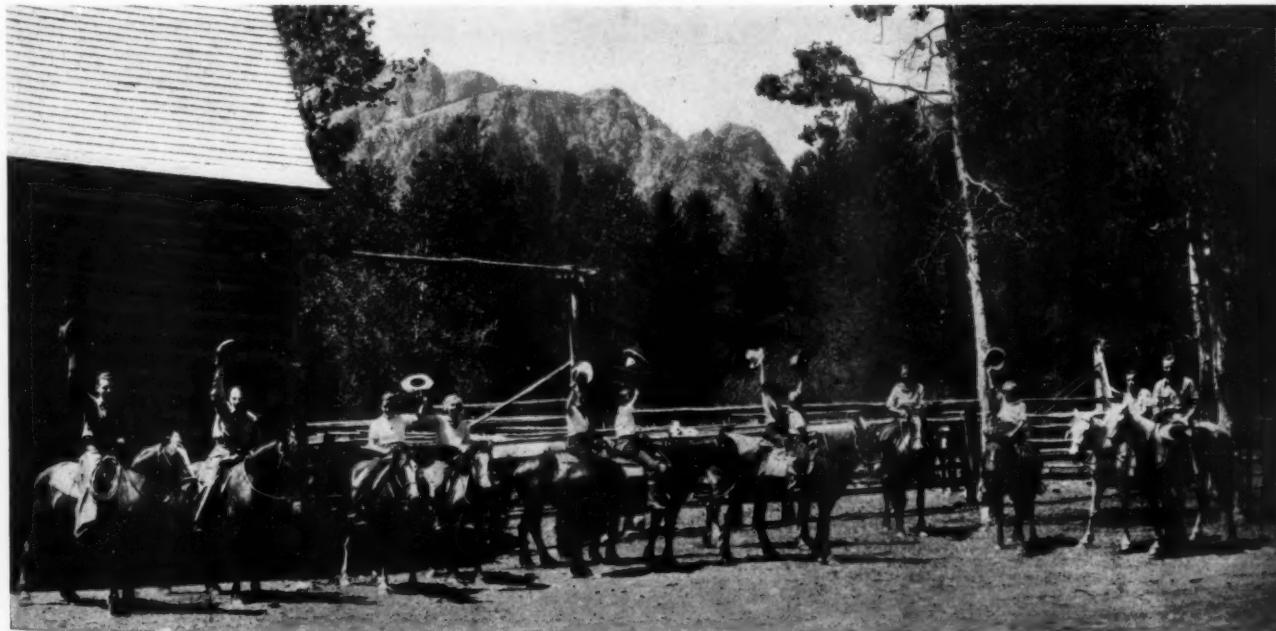
"Just the milk cows," he answered. "Dudes bring in more'n beef, and I can spend the winters workin' in the city—more comfortable. I'm a plumber."

It didn't cure my weakness for cattle herding to be permitted, without extra cost, to drive up Bill's eleven Jersey cows, their calves and a bull at milking time that night. Bill instructed me to bring the bull to the ceremony with his feminine friends, or else he would come through the fences.

"Where's our cowboy guide?" I asked the next morning when we were ready to ride to the Wahoo, a neighboring ranch which was sponsoring a public rodeo and barbecue.

"I'm it," answered Bootie, a girl in blue jeans, cowboy boots and wide-brimmed hat. She was Bill's eighteen-year-old daughter.

On arriving at the Wahoo, I was gripped with the fear that the wild west had gone feminine. There were hundreds of women—coeds, matrons, grandmothers, infants—all wearing some sort of pants: waist overalls,



Our program was one of action. We rode dark wooded trails, visited Indian battle grounds, went fishing and caught speckled trout

Union Pacific Railroad



Union Pacific Railroad

The wild west has gone feminine, around the dude ranches at least—and the romantic cowpuncher has gone with the cattle

pajamas, shorts, slacks, culottes, jodphurs or chaps! But where were the romantic cowboys! And where were those rude cowpunchers of fiction who lured eastern dudes out and set them afoot in the desert; or mounted them on blear-eyed broncs called "Moonlight and Roses" or some such name?

On a tour of the Wahoo I learned that this ranch, like our outfit, had cabins with fireplace and bath, chef cooking, tea service, breakfast served in bed, sun rooms for bridge parties, and a ballroom, with orchestra music occasionally. Could cattle have a proper home life in such surroundings? I decided it must have been a slight overstatement that dude ranching and the cattle business were combined and conducted side by side with the same equipment. Although no statistics were available, I felt sure that the Chicago stockyards did not depend upon dude ranches to fill their corrals.

These ranches were wonderful places to spend a vaca-

tion, but, after all, they were just glorified boarding houses, with rates several times as high. However, they included the exclusive use of a horse or an animal so designated. These ranches had a rustic atmosphere and gave the guest the impression that he was roughing it, but the only real hardship was that he was expected to ride his horse.

"Many dudes do nothing but sit in their cabins and drink," complained Jim Buzard, a disgruntled old cowboy at the Wahoo who had been renovated for use as a dude wrangler. Of course, he was exaggerating. I learned that it was customary

for all dudes to take short easy rides occasionally.

Disillusioned, I lay awake that night. Although I had gone out there not knowing what a dude ranch was, I was past some stages of ignorance, for in childhood I had ridden cows and calves, raced horses bareback, chased jackrabbits, and had run a go-devil plow in Oklahoma. I was ready for advanced lessons such as steer-roping described in folders.

"We're goin' through the cave today," Bill greeted us at breakfast. He served as guide, camp cook, horse-wrangler, and all things to all guests.

Red, Yale football end, Ralph, a Chicago book salesman, Trixie, a Detroit stenographer, and I agreed to go with Bill. The cave was a beautiful natural formation in the national park. He took us back into it for half a mile, then blew out the only candle and told us to walk out in the dark. Red got his six-feet-two hung up in a small aperture and yelled in fright that he could not

find the way. I didn't understand why we were lost, for I had noticed that there were no branch passages as we came in. But panic seized me, and I thought of wandering for weeks and perishing in underground blackness. Then a light flashed, I heard the invisible Bill laugh, and I felt his arm about my waist, trying, to guide me or something.

"You got turned 'round and were goin' further into the cave 'stead of comin' out," Bill told us.

The next day we rode horseback to a picnic site in Rustlers' Gulch. The chuck-



The wheels of the chuck-wagon still turn, but not for the round-up. Its welcome call is now answered by picnicking dudes

© Brown, St. Paul

wagon followed. One of the boys shot some mountain grouse as large as frying-sized chickens. The wrangler explained to him that he had violated the law, but the boy said he was sorry that the damage was already done. So he cooked his game. After the birds were served, two strange cowboys rode along.

"Light down and have some rabbit," the host invited. They accepted.

"First time I ever saw a rabbit with a gizzard," said one of the strangers, with that smile which cowboys are forced to wear when they call somebody a liar.

We rode to see a waterfall in a national park and lowered ourselves to the bottom on a ladder of lariats,

Dude psychology provides for herding these people's children, who, regardless of previous experience in riding, are soon roaming the range like Sioux Indians. It provides for planning incessant activity to use up the energy of college boys and girls deprived of paved roads and night clubs. Galloping their horses up and down mountains uses up this energy—but it costs money to replace dead horses.

Bill discounted the gag about the girl who said she thought that a saddle horn was used for honking in traffic, but said he had seen dudes who didn't know which side of the horse to mount from. He said he met a New Jersey man who knew that either the porcupine



The ranch had cabins with fireplace and bath, chef cooking, tea service, breakfast served in bed, and sun rooms for bridge parties. Could cattle have a proper home life in such surroundings?

while a Washington, D. C., judge and his wife in the party sang "The Man on the Flying Trapeze," with a Madison Square Garden emphasis on the "Oh!"

One day when it rained I cornered Bill and learned about ranches. Dude ranchers have developed a psychology which includes the practice of taking dudes on camping trips and giving them the impression that their survival is being made possible wholly by their own efforts. It includes the art of making middle-aged matrons happy though on horseback. It teaches that it is helpful to hire older guides to inspire romantic ideas in these women to sustain them when stiff knees and backs threaten to lay them low.

or the skunk fought with poison gas and that the other hurled lances, but the man didn't know which was which.

Our program was one of action, even though it included no cattle herding, round-ups, or branding. We took moonlight rides to sites of Indian battle grounds. We watched a forest fire at night, after riding up a dark wooded trail to a point which overlooked a hundred miles of country. We went fishing and caught speckled trout.

We had a horse race in a meadow. After having ridden army horses at home, where rules prohibited even a canter, I was astounded when Bill shouted: "Now, we'll

race to that tall pine!" Simpkins, a sissy professor from Boston, won that race in spite of all we could do. He simply had the best horse.

We went swimming in cold streams fed by mountain snow, but I don't recommend that. The shock left me without breath to shriek as loud as the situation demanded. Seeking lower altitude, we found a warm-water pond and swam the horses across it. We unsaddled, and Trixie and I rode bareback while Red and Ralph were towed behind, holding to the horse's tails as the horses swam.

After conditioning in the saddle, we rode up to the mountain Cow Camp. There we had our first experience in camping without an automobile beside the tent. We were far from any highway or any help afforded by the machine age. It is clear now why the traditional cowboy shot his wife when she broke her leg.

"Cow Camp" was merely the name of the place; there were no cattle. We stayed until two feminine business executives from Ohio got saturated in dirt and had to go back to showers and finger waves. Dirt didn't worry the men. A clergyman from New York claimed it was his right to get as dirty as possible there. We slept in teepees, tricky little tents that blow down in a storm. Our table service was informal. We reached the point where, without wrinkling them much, we could eat pancakes tossed across the room.

"You women should wear blue jeans," encouraged Susie, Bill's wife. "They wash, and you can't tear 'em."

Their disadvantage, we found later, was that they drew up two inches the first time they were tubbed, a half inch the second, and a fraction of an inch each time after that. It took a mathematician to figure out what size to buy.

"I'm gonna take Grace and Auntie on a pack trip to Emerald Lake," Red announced one day at Cow Camp.

"With me as guide?" asked Bill.

"No, I'll guide, wrangle, and everything," said Red.

Although Red had carried pigskins over gridirons, he had never tied a diamond-hitch on a pack, pitched a tent, nor wrangled horses overnight.

"We don't have any hobbles," Bill pointed out. "Your horses might leave you in the night." Emerald Lake was twelve miles from Cow Camp. It was a beautiful spot in the national forest. On its bank was a natural camping site, with spring nearby.

As Red was determined to serve as his own wrangler, it was planned that we should stake out Nellie, a favorite mare, with the horses. Bill felt sure the other horses would not desert Nellie. We left the next morning, and by five o'clock that afternoon our tents were set up beside the lake. Red told us that we were to do nothing, not even help cook, as that is a dude wrangler's job. He finally said I might keep an eye on the horses.

It was well that we went to sleep early that night, for at dawn Red came to our tent and told us that two of the horses, Silver Angel and Whiz-Bang, were gone. He left immediately to find them, as he was afraid they had gone back to Cow Camp.

After breakfast we sat on the rocks in the sunshine, and camp-followers flew around us. We found that these birds would light on our heads and eat pancakes placed there. Many hours passed, but Red did not come back. We decided he had gone to Cow Camp, and we knew that if so, he would be gone all day.

Two suspicious-looking men with stubble beards camped near our tents. We trembled in our cowboy boots—two women alone in the high mountains many miles from any human help. By that time in the afternoon heavy clouds had hidden the sun, and tiny pellets of sleet had begun to fall. The wind was threatening to blow down our poorly stretched tent.

After an absence of about twelve hours, Red appeared, leading the errant horses. He had been delayed because Whiz-Bang was hard to lead upgrade on the mountain trail. He cheerfully greeted our camp neighbors, and we learned that they were just New York dudes.

At the end of my vacation, I knew that I had had a wonderful holiday riding in the national forests; I admitted that life on a western dude

ranch was diverting, and I would have pronounced it entirely satisfactory if I could have forgotten about the cattle-herding. But in one respect it conformed with all traditions: people observed old western code, and asked no prying questions. All that I was requested to reveal about myself was whether I had a pair of spurs, and whether I liked cream in my coffee. No one inquired what I did for a living and few asked where I was from. It is no secret that I am a Sooner journalism teacher, but once a year I like to leave the scene of the crime and forget about it. I don't want to be cross-questioned about when, how, and why I work.

## LAST CALL FOR THE WILDERNESS

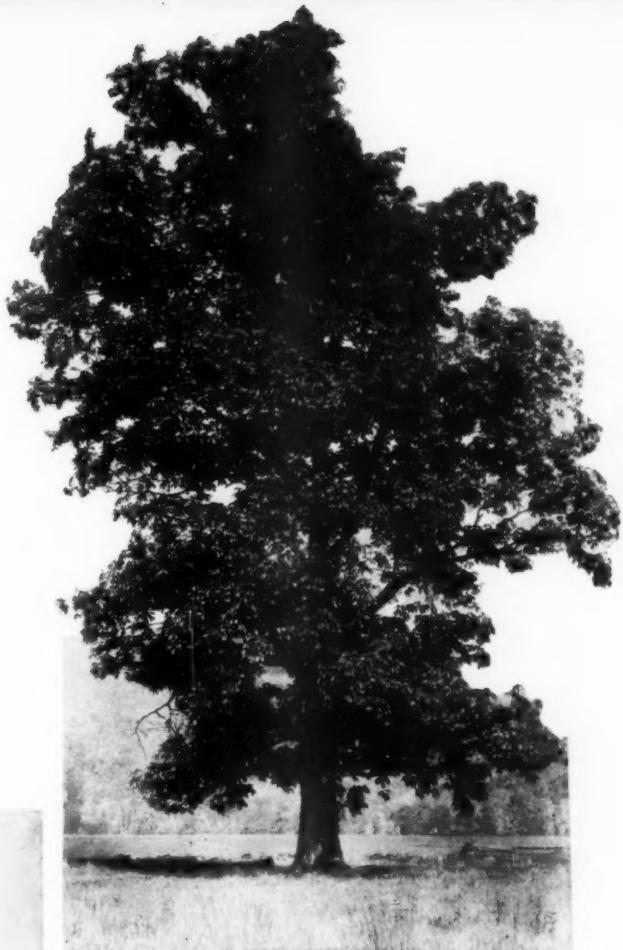
Although one party is already in the field and two more are making ready to get under way early in August, there is still time to join the Kings River Expedition of The American Forestry Association's "Trail Riders of the Wilderness." A limited number of reservations are available for this party, scheduled to leave Bishop, California, on August 20 for thirteen days in the highest country in continental United States. The first expedition left Sun Valley, Idaho, on July 18 under the direction of G. H. Collingwood, forester for the Association. The Gila, New Mexico, party will get under way from Silver City on August 1, while the Maroon Bells-Snowmass party will leave Glenwood Springs, Colorado, on August 3. Reservations on these two expeditions are not available as they reached their maximum number early in July. For reservations with the Kings River party, however, write or wire The American Forestry Association, 919 Seventeenth Street, Northwest, Washington, D. C.

# WHAT IS YOUR FAVORITE TREE?

By HENRY CLEPPER

SOME years ago James Whitecomb Riley, the beloved Hoosier humorist and poet, was asked by a young lady to name his favorite tree. Characteristically, his reply was, "I like yew."

John Muir, one of America's most famous naturalists, once said, "I can't say which of God's trees I like best, though I could write a big book trying to. The hickory is my favorite genus."



Hickory—a rugged, distinctive American tree—  
favorite of rugged, distinctive Americans Theodore  
Roosevelt and John Muir

Theodore Roosevelt also was partial to the hickory because it is such a distinctly American tree. "But," he commented, "there are many others—the oak, beech, birch, chestnut, pine and, under certain circumstances, the maple and locust—of which I am equally fond, and I have a peculiar feeling for the tulip tree."

John Kendrick Bangs, who will be remembered as a famous humorist of several decades ago, observed that "The President's (Theodore Roosevelt) choice of the hickory is quite appropriate, and I am glad to know what the Big Stick is probably made of. I knew it was a shillelagh of powerful attributes. The pine is my favorite tree."

We Americans love trees. Although for three hundred years our history attests to the almost ruthless exploitation of our forests, nevertheless trees have been so intimately a part of our life as a pioneer nation that we have a heritage of affection for them. And practically every person has a favorite species.

In searching the writings of distinguished Americans of the past for expressions of their favorite trees, I find that individual preferences usually reflect the personalities of those choosing them. Thus

Favorite of President Franklin D. Roosevelt and Gifford Pinchot, is the tulip—another typical American tree



The massive beauty of the oak,—best loved by Woodrow Wilson and Edwin Markham while (below) the elm, a general favorite, is honored as the favorite tree of Harriet Beecher Stowe, Oliver Wendell Holmes and J. Sterling Morton, "Father of Arbor Day"



it was quite in keeping with Theodore Roosevelt's character to name as his favorite tree the straight, strong, rugged hickory.

It is understandable that many people think of their favorite species as one with which they had been intimately associated in childhood. John Bur-



Maurice Maeterlinck — dramatist and author of "The Blue Bird" — favored linden and cypress but heads the army of lovers of the beech — beauty of the woodlands

roughs, that great author of nature books, once wrote, "I think the maple is my favorite tree because it is my home tree—it was the prevailing tree in my home woods."

Franklin D. Roosevelt's favorite is the tulip tree or yellow poplar. The President is also partial to the various evergreens of which he has planted thousands of many species at Hyde Park. Mrs.

Roosevelt has two favorite trees which she likes equally well. They are the American larch and the sugar maple.

James Montgomery Flagg, the celebrated illustrator and artist, whose forest fire prevention painting appeared on the cover of the April issue of *AMERICAN FORESTS*, selects as his favorite tree "the Eucalyptus, which I call an artist's tree on account of its colors—bark and leaf—and its decorative grace." He adds, "Of course the oaks and elm are grand."

Several years ago school children from all over the nation voted the American elm the most popular tree in the land. It is interesting to know that Harriet Beecher Stowe, who attained immortality in American literature as the author of *Uncle Tom's Cabin*, once said, "The graceful New England elm is my favorite northern tree and the orange tree my favorite among southern trees."

Oliver Wendell Holmes asserted, "My particular favorite among forest trees is the elm." Of more than passing interest is it to note that the noble elm was also the favorite tree of J. Sterling Morton, whose name will live for all time as the founder of Arbor Day.

In a letter written from the White House in 1917 Woodrow Wilson mentioned that his favorite genus was the oak. It was also the favorite of Edwin Markham, author of that well-known poem *The Man with the Hoe*, who called it "his most loved tree."

William Dean Howell's favorite tree was the mulberry. "I like mulberries," he said, "and I like boys. There cannot be too many of either."

Maurice Maeterlinck, better known to a former generation as a famous dramatist and author of *The Blue Bird*, wrote, "It is difficult for me to tell what tree I prefer, for I love them all. Nevertheless, among those I love best are the beech, the linden, the cypress, and the orange tree."

Secretary of Agriculture Henry A. Wallace has not one, but three favorite trees, "based on esthetic considerations in the fall of the year." They are the aspen, birch, and hard maple.

Secretary Harold L. Ikes of the Department of the Interior greatly admires the great trees of the West Coast. Particular favorites of his are the sugar pines of the Yosemite country, and the California redwoods and Bigtrees.

Dr. Joseph Trimble Rothrock, whose memory is revered as the father of forestry in Pennsylvania, frequently mentioned his great admiration for the hemlock, which, together with the mountain laurel, was his favorite species.

Forestry and conservation leaders of today also have their favorite tree. The tulip tree is the favorite of Gifford Pinchot, C. F. Korstian, president of the Society of American Foresters, and James G. K. McClure, president of The American Forestry Association.

Jay N. "Ding" Darling's first choice is the red oak, and next to that the sycamore.

Robert Feehner, director of the Civilian Conservation Corps, has two favorite trees, the venerable live oak and the American elm. The favorite of F. A. Sileox, chief of the federal Forest Service, is also one associated with memories of his boyhood in the South—the cypress.

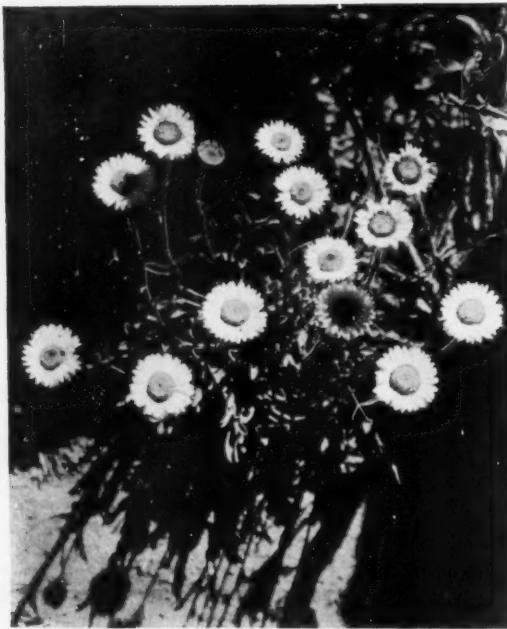
My own favorite is likewise a tree of my boyhood. Particularly do I recall those crisp autumn mornings in Pennsylvania gathering its nuts. Although a fatal blight has since practically wiped it out of our eastern forests, no other tree will ever take its place in my affection and esteem. My favorite tree is the chestnut.

What is yours?

AUGUST, 1939



An artist's tree—the eucalyptus, because of its lovely color and decorative grace, is the characteristic choice of the American artist, James Montgomery Flagg



Arthur B. Johnson

The Lavender Mountain Daisy embroiders the trail at 11,000 feet high

FROM the edge of a high plateau we looked down on Lake Washburn, a dark blue oval far below. In the distance we could see Cloud's Rest, and since we were nearly on a level with it, and knew how it towered over the Yosemite Valley, we felt that our legs had carried us high. We felt just a little proud. A flash—a whir—and a fluff of greenish-yellow feathers hovered over our heads. A mere scrap of animation—a hummingbird, zinging circles over and around us. Ten thousand feet were mere bagatelle. We felt humbled—and exalted.

It was my first pack trip into the High Sierra of California. One golden morning a party of us undertook the climb of an unnamed 13,000-foot peak. A few hundred feet from the summit, we were baffled by an overhanging rock which seemed to block the only possible route. We were too near the top to wish to turn back, but having come without a rope, the problem looked hopeless. In the midst of our quandary, someone noticed a gallant little spray of white columbine among the rocks. The dainty sight seemed to break the tension. Oddly enough, then, the riddle of the overhanging rock yielded quite readily to a system of "shoulder-stands" and a little courage.

Eventually we reached the summit, and found it topped by a giant cleaver-like rock which looked as if some mighty hand had hurled it into the mountain-top. It had worn thin, like a blade, near the upper edge, and a hole through the thinnest part provided a framed view of magnificent Mount Lyell. We could barely distinguish the forms of grazing pack animals in the grassy meadow where camp lay, 3,000 feet below. But above our rugged peak, a fragile yellow butterfly flitted with airy unconcern in the rare sun-drenched air. All the earth was beneath it, and if ambition still burned, there could be only one higher objective—the white-jade crescent of the new moon in the blue afternoon sky.

So it is that on a walk in the Sierra you are impressed first by the magnitude of the scenery, the in-

## TREASURES OF THE HIGH SIERRA

By ETHEL SEVERSON

credible height of granite walls, the awesome depth of canyons, and the boundless extent of sky and high country stretching, wave after wave, like an ocean, toward the horizon. Beauty on such a grand scale seems almost overpowering until you note with a rush of delight the little things—the vivid embroidery of flowers by the trail, the speckled baby thrush on a branch, the bed of rosy bryanthus heather, the scarlet stalk of pentstemon. Somehow these things, because they are small and dear and comprehensible, link you to the immensity of granite peaks and the depth of Sierra sky.

It often seems that the higher the elevation and more rugged the setting, the more frail and delicate the flower. Climbers of the higher peaks find part of their reward in the discovery of the deep blue blossoms of the pelenomum and the bright pink of the Sierra primrose. Rock gardens of breathless beauty soften the harshest slopes. And the tiny rosy-brown finch known as Leucosticte is usually on hand to cheer the climber along the last drag to the summit.

In the summer "white water" is everywhere in the Sierra. And every waterfall, every cataract, no matter how thunderous, has its water ouzel, dipping and trilling in the spray. The more boisterous the waterfall, the livelier and more joyous the ouzel. Tiny though he is, the torrent has no terrors for him, and his happy song blends with the music of tumbling waters.

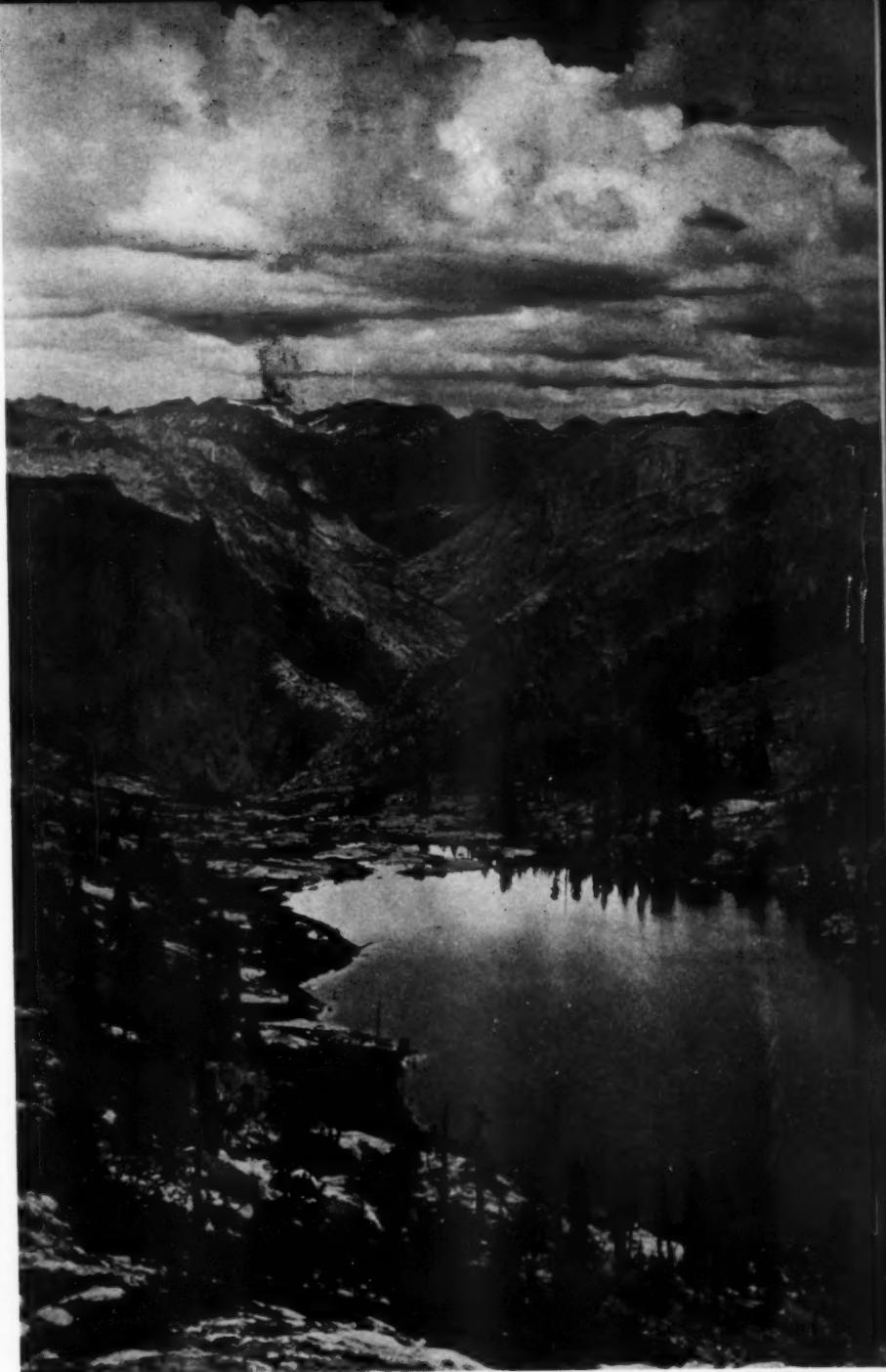
An arduous ski ascent in late April took us up to the treeless white slopes of the summit of Mount San Antonio in Southern California. Looking from our elevation of over 10,000 feet across the ranges of the Sierra Madre to the distant desert, and the other direction across the valley with its scores of cities, to the ocean, we felt as if we had indeed reached heights. Then, high in the air across Cajon Pass drifted a wedge-shaped fleet of white pelicans. Two months later, three hundred miles north, we saw them, or their brothers, playing on the amber waters of Topaz Lake in the Sierra.

The snow on Palisade Glacier, at 12,000 feet, was still several feet deep on July 4. But tiny Leucosticte hopped about on the snow with chummy familiarity, unperturbed by altitude and cold and hidden crevasses. We were roped together, wore crampons, and carried ice axes, but the little finches, with the daring of small things, needed no such artificial aids. Their claws were their crampons; their wings were their ropes. They needed no help and had no fear.

Another day in late July we began the ascent of Sawtooth Mountain from the valley of Mineral King. The trail led up to a series of cirques, the first of which was green and meadowy with a lively stream rushing down from the cirque above. A stately juniper tree guarded a turn in the trail. From the flowery alpine meadow it was startling to glance upward to a dizzy rampart of granite pinnacles, with a row of junipers clinging toy-like along its base. An eagle swept down from the pinnacles and circled high above us. If he were laughing at us, he had reason, we suspected, from the looks of a certain cloud hanging over the pass. And he probably chortled to himself on his crag when the sky darkened and the thunder began to roll. A few drops of rain fell. Then the sky opened and such a hail storm descended as the settlers of Mineral King had never seen before. For hours we sat huddled under a poncho against the trunk of a juniper while the pellets, ever increasing in size and vehemence, stung our heads and shoulders. At last the bombardment ended as suddenly as it had begun. We peered out. The ground was literally white. Nearby peaks showed great patches of white that had not been there as we came up the trail.

We started down the mountain and found little rivers where trails had been. The stream had become a torrent, and only a miracle had saved three of our party, who had gone ahead and taken the wrong route, from being carried over a waterfall. Shredded leaves lay beneath the bushes. Gradually the sky lightened. A blue patch appeared in the west, and when the sun broke through, the cirque and valley were fresh, quiet with the ineffable peace that follows the storm.

We looked up at the frowning rampart. Just then there was a rush and a twitter underfoot, and a mountain quail with its young scattered into the underbrush. The cheerful piping of the babies came from every nook



Ethel Severson

A panorama of breath-taking beauty, spread from the Middle Fork of the King's River in the High Sierra

of the bushes. At nine thousand feet, under the eagle's eyrie, the frail chicks had weathered the storm.

It's things like that one loves to remember. It's the rock garden of lupine and asters and phlox. It's the clump of cassiope heather by the waterfall, the rust-colored marmot ducking behind a rock, the frail white Mariposa Lily, the twisted red trunk of the Sierra juniper. It's the fusing of one's very being with peaks and heather and clouds and stars—and the knowing you're one of the "little things that count."

# CHICAGO'S FORESTERS FIGHT FIRE

How the Cook County Forest Preserve Meets a Problem Created by the Millions It Serves

By ROBERTS MANN



© Chicago Aerial Survey Company

How a section of the 43,000-acre forest preserve of the fifth largest city in the world is protected from fire — Fire lanes (A) parallel highways and separate grassland from woodland, truck trails and bridges (B, E and G) enable fire fighting trucks to reach fires in minimum time; automobiles are confined to designated parking areas (C) and main roadways (D and H); while special picnic shelters (F) and other recreational facilities are located in areas of low hazard

A FOREST preserve in a metropolitan area has as its greatest enemy the very people for whom it was created. The city dweller, at the tail end of an era of rugged individualism but ignorant of its stalwart creed, shames even the ancient barbarian who pillaged with fire and sword. Racing through the countryside in his modern Juggernaut, the automobile, he substitutes the cigarette for the torch and the ax for the sword, laying waste and leaving as his patteran the tin can and the bottle on a blackened land.

The habits of four million people can be altered only slowly, by precept, education and guidance. In the mean-

while the principal wilderness-destroying agencies—fire and the automobile—must be controlled by barrier and other physical means. In the Cook County Forest Preserve this is being done by confining the automobile to the highways and to parking spaces just off the highways. Yet fire still presents a menacing problem.

The Forest Preserve District of Cook County was created for the purpose of preserving in or restoring to its native state of 35,000 acres of landscape, within that county, together with its flora and fauna, for the recreation, education and enjoyment of the public. That limit of acreage is now to be extended to 43,000. The present



Smothering a fire with the newly designed hose "fog" nozzle. This blankets fires of great intensity with a minimum of water consumption. Note the con-shaped spray.



Truck trails permit quick access to all sections of the preserve. They also serve as hiking and bridle trails for visitors through its loveliest sections



Modern fire trucks capable of traveling forty-five miles an hour fully loaded are employed in the Cook County Forest. They are equipped with water tanks, pumps, hose and other tools of the fire fighter



Fire fighters demonstrate their equipment. Left and right, spray tanks, center, water hose, foreground, the "flapper," used to beat out the smaller fires with great success



As a fire prevention measure, automobiles in Chicago's forest preserve are confined to designated highways and parking areas. From here the visitor walks

holdings are largely wooded with pure hardwood stands, predominantly oak, and lie, roughly, in a great outer belt around the city of Chicago—some of it actually within the city and much of it between the city and the eighty-eight suburbs crowding upon each other's heels along the radiating railroads and highways.

It is strung along one or both banks of the five major water courses: the North Branch of the Chicago River and its three forks, the DesPlaines River, Salt Creek, Thorn Creek and the Little Calumet. There are several large isolated holdings, including the Deer Grove and Elk Grove preserves of 1,300 acres each in the northwest part of the county, and a block of 8,000 acres in the southwest Palos hills, straddling the Sag Valley. From the standpoint of fire protection, 43,000 acres in one chunk, with a few controllable entrances, wouldn't be so bad; but as it is, scattered and strung out over a sixty-mile front, the problem of control is a perpetual headache.

The preserve is traversed or bordered by almost every major trunk highway leading to Chicago and these, together with the vast network of primary and secondary roads, give it a total highway frontage of 185 miles. This frontage, and an even greater length of boundaries abutting private property, renders its forest and meadow lands peculiarly vulnerable to fire entering from without.

In a metropolitan area of four million people the situation is complicated by the indifference, carelessness and ignorance of the general public. Malicious incendiaryism plays a comparatively minor part, confined largely to occasional grass fires set by roaming boys. Urban and rural folk alike must be taught that fire is the greatest enemy of both forest and meadow—that glowing matches, cigarettes, cigars and even pipe dottle are not only potential agents of destruction when tossed aside along a trail, but that when thrown from a moving car, they can be fanned to a flame that will ignite the roadside grasses and sweep into the adjoining preserves. They must be made to know that the burning off of private meadow or hay lands results in injury rather than benefit to the productive power of such lands and may spread beyond control into the preserve, destroying its carpet of wild flowers, its seedlings and shrubs, the leaf mold on the forest floor—so vital to the food and moisture supply of its trees—and scarring the very trees themselves for the ready entrance of disease and decay.

During the last decade there has come about the semi-annual custom of burning off all vacant prairie lands. The suburbanite, in both spring and fall, burns off everything around him, rarely bothering to wait for a damp or windless day. The grasses and the wild flowers that once glorified those prairies have disappeared and in their stead have come the crabgrass and the weeds whose roots and seed the fire does not destroy.

The greatest factor in fire prevention becomes, therefore, one of education. News stories, often with timely, interest-catching pictures, are fed to the great Chicago dailies and are welcomed by the suburban and foreign language newspapers. Talks, illustrated by slides or moving pictures, are given constantly before school assemblies, youth organizations, luncheon clubs and women's clubs. "Junior Fire Fighting Clubs" are being organized in the suburban schools. All of these stress the fire problem and the destruction fire leaves in its wake. Warning posters appear along the roadsides during every acute period of fire danger. By this constant hammering at public consciousness and educational training for all ages there is gradually being developed a sympathetic understanding of fire prevention and protection.

The primary measure of fire control on the preserve was the construction of a system of fire lanes. Strips from six to sixteen feet in width have been plowed just inside the highway right-of-way lines wherever sufficient open ground permitted, around all reforestation plantings, and between the woodlands and all grasslands—158 miles, or approximately 300 acres, to be kept free from vegetation by replowing or disk ing at an average annual maintenance cost of ten dollars a mile. This is Item No. 1 in the budget!

Now it must be admitted that fire lanes, while all-important in preventing the entrance of fire or limiting its spread to a controllable area, introduce a sour note into the landscape. Further, these ugly scars are susceptible to erosion in spite of care taken to follow contours. And because so much of the soil is highly fertile, such lanes are quickly covered with grass and weeds unless frequently cultivated. So several experimental miles along the highways have been planted with permanent borders of vegetation that will form a non-inflammable barrier. Limited by climatic and soil conditions, trials have been made with a low-growing form of matrimony vine, wild grape, dwarf willow, and Japanese honeysuckle. Of these the matrimony vine appears to be the most suitable, forming a low, dense growth that inhibits all grasses, weeds and drifting leaves. It will not burn at any season of the year.

In the interiors, largely hidden from the highways, another experiment is being tried. Several miles of fire lanes have been sterilized with an arsenic treatment calculated to prevent the growth of vegetation for three or more growing seasons. The lane is thoroughly disked and then sprayed at the rate of one gallon per square rod with a solution of sodium arsenite, diluted with three parts of water. The cost per mile varies from \$20 to \$40, according to the chemicals used, but, in any event, the sterile fire lane produced has year-round effectiveness and, since it releases the tractor equipment for other purposes at the season of greatest demand, will be justified if it requires renewing no oftener than every fourth year. Inasmuch as there are no grazing animals, other than the ubiquitous rabbit, the usual and very real danger to domestic and wild life is not a factor here.

The second measure of control, defensible in a metropolitan area because of its multiple use, has been the construction of over 150 miles of truck trails. These serve also as combined hiking and bridle trails, and as fire-breaks supplementing or supplanting sections of fire lanes. They were constructed, with culverts, bridges and other drainage structures, wide enough to permit the passage of a fire truck. Many are surfaced with cinders or gravel and provide means of travel into interiors formerly difficult of access. Their entrances off highways are blocked with gates or removable posts operated with special wrenches furnished only to preserve employees. They were built entirely with CCC, CWA and WPA labor.

Aside from their aid to the patrol and maintenance forces, these trails have become one of our greatest recreational facilities. They draw people from the highways into the unspoiled hinterlands where, afoot, they may gain a little of strength from those towering oaks and a little of peace from those placid valleys.

The old saying is that all signs fail in dry weather. So do all fire prevention measures, including prayer. That puts a premium on good organization and good equipment. A minimum of delay in reporting a fire, a minimum of time consumed in getting to it, and a minimum of time required to (*Continuing on page 427*)



# FOREST FIRE

By GLORY E. SCOTT

Man has such kindly interchange with trees;  
But few of us have ever chanced to tell  
Of a forsaken forest, and we know it well —  
Where that dark foe, — a fire, has had deep sway  
And valiant trees have dearly had to pay.  
Some etched in black against a sorrowed sky —  
Others, so gaunt and gray, are left to die.

We all, in death, may rest in calm content;  
But these reluctant warriors, when their life is spent  
Must straight and steady at attention be  
And so a tragic sight present to you and me.  
Nothing but dread decay one seems to see,  
Rearing their own drear tombstones, as it were,  
Of what were once resplendent spruce and fir.

Dear trees, we tolled your passing that grim day,  
But life is re-expressed in its own way:  
Upon each bosom glowing fireweed creeps —  
A warm and tender carpet — while each sleeps.  
A henchman for each barren pedestal —  
But there is still a better part to tell:

In days to come when we, too, are at rest  
Others shall walk these hushed aisles, dim and  
blest,  
Seeds scattered by those messengers of song.  
Exiled from forest homes for ah! so long,  
Until the gladsome wind sighs through each fair  
new bough,  
There shall be nests again to thrill them —  
Some tiny, nestling brood, with sleepy song,  
When dawn appears and the long night is gone.

A timid violet comes again and lives  
Under the sweet protection the forest gives —  
The brazen brachen, too, returns — why not?  
A safer place than in some garden plot.  
Young lovers stroll beneath the smiling shade  
The kindly years with healing sweet have made,  
Even a brook, trifling sometimes to man,  
Again is welling here as best it can.

Oh thou, in the blest ages that are thine,  
Join then, in endless worship at this shrine.



# WILDLIFE IN GOTHAM

By LORINE LETCHER BUTLER



The herring gulls are familiar to all New Yorkers

AFTER reading Alexander Woolcott's story of the gentleman who met a lion while strolling down Fifth Avenue one empty Sunday morning, one need hardly be surprised at any manifestation of wildlife within the area of New York City.

Yet country people are wont to shudder in aversion or melt in sympathy because of the concrete-bound and stone-proof lives of New Yorkers. How can people live without trees and flowers and birds, or a glimpse of the sky? Well—they don't!

In the first place, the most splendid sunsets in the world are those that take place over the Palisades along the Hudson River, when streamers of red and blue and gold play upon the castles in the air that are the white towers of Manhattan.

Overhead the herring gulls bathe in the light celestial, or an eagle aims at the red ball of the sun disappearing behind the rock escarpment. There are eagles that nest on the Palisades and make excursions over the city. They make a good living by hi-jacking the gulls as they take fish from the Hudson River.

Likewise, there are peregrine falcons that survey traffic from the gilded tops of Gotham—yes, even nest in the vicinity. Last summer the roof of a Brooklyn apartment house was the nesting site chosen by these creatures of the wild that are rated among the speediest and most rapacious of American hawks. It was the

drifting down of pigeon feathers that first attracted attention to their presence.

The peregrine, generally known as the duck hawk, is that romantic bird of history, the one that sat upon the wrist of nobility when falconry was the chief sport of the realm. Persons of lesser rank had to be content with lesser hawks. The goshawk was allotted to the yeoman, while the sparrow hawk was all that was left for the priest. The gyrfalcon was the king's own, and the swift stream-lined peregrine could be carried by none less than an earl. Quite appropriately the peregrines of Brooklyn chose a building of medieval architectural design for their eyrie.

On a steaming August day when frolicsome bathers on Coney Island play leap frog on the sands while barkers on the boardwalk raucously call attention to hot dog stands and daredevil diversions, the tern, graceful white sea bird of pointed wings and long forked tail—the sea swallow—dips and curves and skims the air just over the heads of the bathers, or alights on the water with fluttering wings and down-pointed bill to seize some salt water tidbit from the bathing zone.

The parks that afford relief to refugees from the city heat also offer opportunity to study nature at first hand. In Alley Pond Park there is a mile-long nature trail through a thickly wooded area, where mossy paths wind beneath towering beech and oak trees, and wild



Courtesy New York Botanical Gardens



Gotham parks abound in bird life. To the beeches and oaks and lesser trees, shrubs and wild flowers come song birds and water fowl to nest and to feed. One may see the robin (at nest), the flicker (at right), the red-eyed vireo, the brown thrasher, orioles, tanagers, eagles, hawks, terns, owls, even the graceful egret, and a score of others.

flowers and shrubs decorate the edges.

The red-eyed vireo, bird of the woods, greets the visitor with its loud and never-varying song from many a leafy retreat. And the wood thrush's bell-like voice makes musical the trails well into July. The brown thrasher flies across a still pond, its cinnamon colored plumage reflected on the surface of the water.

Around a bend the clear pool becomes a heavy marsh, thick with cattails and carpeted with duckweed. Dragonflies with spotted wings flip the water. Occasionally a bull frog sends its resonant "chung" across the marsh. Beyond the pond the nature trail leads through a grove of handsome beeches, their gray satin trunks smooth and uninitialed. At their

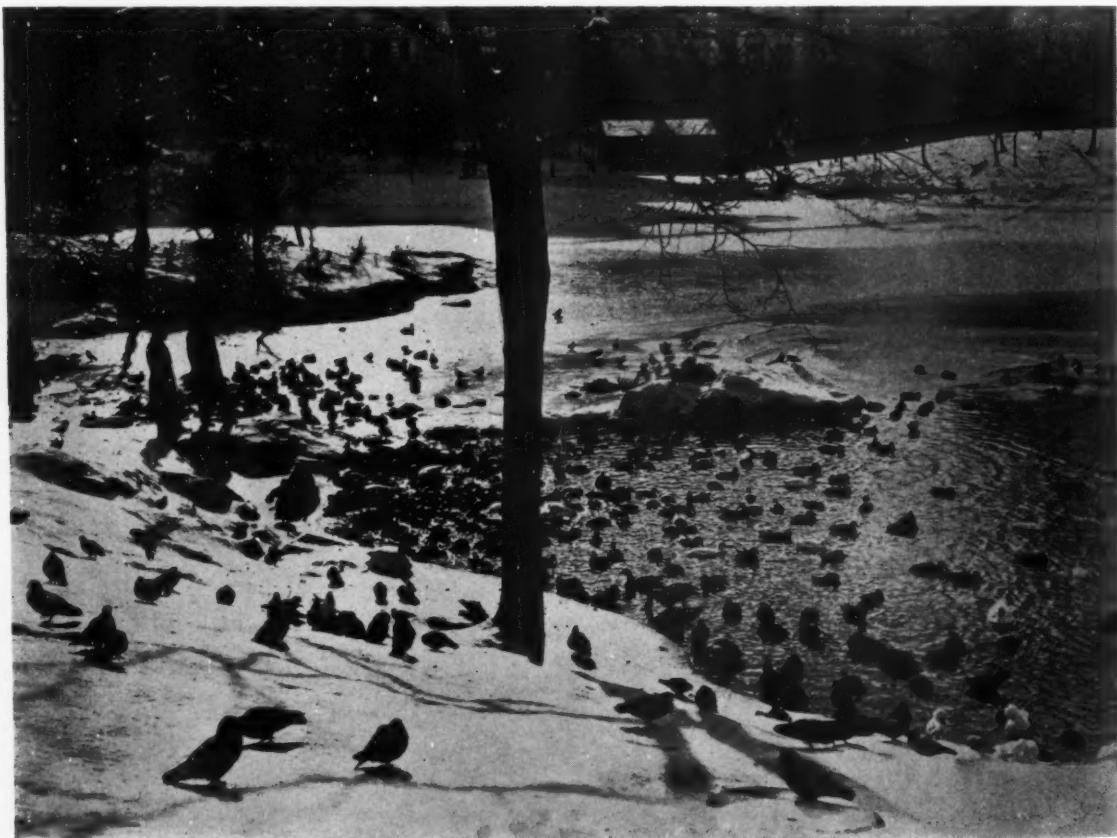


Hudson River Day Line  
In the wooded mountains overlooking the Hudson River Valley, New Yorkers may find deer

for the bobolink and goldfinch. At the edge of the field there is a heap of smooth boulders. One wonders if they were left there by the (Continuing on page 430)

base is seen that oddest of wild flowers, Indian pipe, the corpse plant, of ghostly grayish white — blossoms, stem and all. Beneath the beeches a chipmunk hurries, like the white rabbit, as though late for an appointment. Beechnuts are a favorite food with the chipmunk, so this Alley Pond Park resident does not lack for winter supplies.

Off to the right the shady path breaks abruptly into a broad open field, daisied in the spring and splashed with goldenrod and ironweed in late summer. A delightful resort



Central Park in winter affords refuge to many strange creatures of the wild—the snowy owl, longspur and snow bunting from the Arctic, for example—but ducks and geese from Canada form the greater part of the bird population

Wide World Photo



The great coliseum at El Djem, Tunisia, is all that remains above drifting sand of the once populous and prosperous Roman city of Thydrus, famous for its vast olive culture

## FOOTPRINTS OF ROMAN AGRICULTURE

A Modern Conservationist Reads the Landscape of a Long Inhabited Land in North Africa and Translates Its Story of Continued Abuse by Man

By W. C. LOWDERMILK

Chief of Research, Soil Conservation Service

THE onward rush of high speed agriculture in the United States and the rapid impoverishment and destruction of great areas of fertile lands, have led conservationists to turn the pages of history for study of land use of older civilizations which have waxed and waned or disappeared, so as to profit by the experience of the past.

The most surprising revelation of a journey—six months thus far—across Europe and North Africa has not been the huge land reclamation projects of the modern nations, admirable as they are, but the millions of acres of land in North Africa despoiled and denuded by the hand of man and his herds, leaving only footprints of past glory upon the naked landscape.

These footprints of Roman occupation are sometimes indistinct or strewn about, or buried altogether. Others are still intact and useful, though overrun by centuries of time and marauding invaders. These footprints con-

This is the second of a series of three articles by the distinguished soil explorer, W. C. Lowdermilk, who early in 1938 set out to follow in the footprints of the ancient Romans in North Africa. His first article was published in the July issue of **AMERICAN FORESTS**, and his series will be concluded in the September issue, when he discusses the control of little waters in North Africa during Roman times.

As chief of Research for the Soil Conservation Service of the Department of Agriculture, Mr. Lowdermilk is seeking to determine the part soil destruction played in the crumbling of the great empire of the Romans in North Africa six thousand years ago, and thereby contribute to the knowledge of man in the present battle against soil erosion and depletion. So far he has traveled nearly 7,000 miles—across Algeria, Tunisia, Lybia and into Egypt and Palestine, following the route of the Children of Israel.

sist of the buildings of great Roman cities and towns, some of them excavated or in the process of excavation; others are still buried in the tombs of time, covered by erosion of the land which formerly fed them. There are also great aqueducts, cisterns, wells, tunnels, terraces, paved roads, covered sewers, canals, grist mills, check dams for diverting or spreading waters, desilting basins and reservoirs, innumerable stone olive presses often in areas devoid of trees, and, interestingly, one single section of old olive tree culture whose gnarled trees still grow in basins where the Romans had planted them at least fourteen centuries ago.

For seven weeks our automobile had rolled across 6,500 miles of North Africa, including Algeria, Tunisia, Tripoli, Lybia and Egypt. From oasis to oasis, past camel caravans, through herds of sheep and goats, past Bedouin nomad tents and natives still living in villages under

stone-age conditions. We have watched the landscape change from a covering of olive groves, vineyards and grain fields in fertile alluvial plains to the nakedness of desert pavement, rolling sand dunes, or mountain slopes overgrazed and scoured down to their rocky skeletons. We have seen, side by side with great modern projects of reclamation, conservation and colonization, the terrific ravages of man's abuse of the land over centuries of occupation.

Across the centuries comes the warning from the older countries that civilizations rise or fall on their food supply; that the conservation as well as protection of productive soil and water resources is vital. Erosion, both by wind and water, is as great, if not a greater enemy to modern than to ancient civilizations because the use of power makes man more destructive in his exploitation of the land than ever before in human history.



At El Ma-el-Abiode, just south of Tebessa, Algeria, on a broad valley plain, stands the ruins of this large olive press, a vivid reminder of the olive culture which flourished here during Roman times. The ruins show that six large presses, with base stones three feet in diameter, were used here—designed to receive large quantities of olives expeditiously.

Today not a single olive tree may be found in the region

The widespread occurrence of these ancient Roman ruins and their richness and magnificence which bespoke a prosperity and population exceeding many times that of today, first led observers to conclude that climate had changed for the worse since the Roman era. But thorough studies in recent times have found no evidence that climate has changed to any important degree; it appears that the Romans enjoyed no more rainfall than is given to the inhabitants today. Locally, however, important changes of climate have occurred where lands have been denuded of forests and vegetation and subjected to erosion and the quick run-off of beneficent rainfall, resulting in desert-like conditions.

One can read the landscape of these long inhabited lands and translate the story of centuries of continued abuse of soils which formerly maintained large and flourishing populations, but which can now supply meager sustenance to a fleeting and sparse population of nomads. The phenomena of shifting soils is thus far the most significant finding of our observations. Soils of entire mountain and hill slopes have shifted from the rock foundations to expose the naked rock skeletons of the hills.

Quantities of these fertile soils have been carried out to the sea in numberless torrents which discolored the blue Mediterranean with their silt laden waters. A portion of these shifting soils came to rest on the valley floor or canyon bottoms, depositing sometimes to great depths. These form fertile soil oases in the otherwise barren countryside; but storm waters which rush off the barren slopes cut gullies into even these.

The destruction of Roman civilization in North Africa began with a moral decay and decline in the midst of luxury, and led to the incursion of the Vandals. While the Byzantine occupation recovered, rebuilt and stabilized a part of the empire, it was only temporary. During the sixth and seventh centuries the Arabs swept over the land and destroyed Roman cities, Roman culture, Roman agriculture, and even the traditions of agriculture. More than anything else, they and their goats set in motion

the processes of erosion which have shifted the soils and transformed vast areas of formerly productive lands into desert-like wastes of active erosion. The Arabs, descendants of Abraham through the line of Hagar and Ishmael, are frequently spoken of as "Sons of the Desert," but it may be more apt to call them "The Fathers of Desert Lands." They have been a nomadic people, caring little for permanent homes and agriculture, wandering about with their herds according to the dictates of drought or pasture, and chopping down trees for firewood or burning them to increase forage for their flocks.

One cannot realize the destruction and transformation until one has

seen the amazing grandeur and beauty of these Roman cities now being excavated from the erosion debris which buried them. The wreckage of the surrounding lands is even greater than the destruction of the cities. Cities can be rebuilt, but surrounding slopes are cut up with such labyrinths of writhing gullies that the original vegetations or former condition or use cannot be determined.

One day, after traveling for thirty-nine miles from Sousse, in Tunisia, over an empty, tawny landscape, paralleling an old Roman paved road, and passing only Bedouin nomads and small clusters of houses not worthy to be called villages, we were startled to see a huge dark mass loom up on the horizon. It grew taller and wider as we approached, and began to take clearer form. The light spots became windows and the jagged top and walls took the form of a huge coliseum with a circumference of 1,200 feet and a seating capacity for 60,000 people. This mass of building stone and marble had, nearly 2,000 years ago, been brought by boat to the coast, thirty-one miles away, and then carted overland to the populous and prosperous Roman city of Thydrus, famous for its vast

olive cultivation. Now nomad Marys were being followed around this great structure by woolly lambs, sheep and black goats as they foraged for meagre herbs, or ate the barbary cactus beside the road.

Our highway passed around the coliseum and over the great city of Thydrus, buried under the sands of the centuries. After destroying the city the Arabs used the coliseum as a fortress. As is their custom, they also destroyed the trees and orchards. Then the denuded lands began to blow. Wind erosion covered the city entirely, and partially filled the coliseum. Recent excavation revealed spacious thermae or public baths with gorgeous mosaic floors, still colorful and intact. Sand had preserved what the hand of man had failed to destroy. The outlines of a mammoth Roman circus, or amphitheater, have been discovered but not yet excavated. A miserable village has been built above the old city with stones which the Roman had so carefully carved and shaped into beauty, quarried from the upper ruins of the coliseum. This magnificent edifice no more resembles the present filthy village called El Djem, which has been hatched out as a brood from the mother stones, than does a peacock which has been deceived into hatching forth a brood of vulgar sparrows.

Around this region, as well as in countless other areas, sometimes treeless or with only an occasional olive tree as a remnant, we found great numbers of Roman olive presses of stone. French archaeologists have been of great assistance in determining the possibilities of reclamation based on former Roman land use, due to these footprints left among the sands and soils of time.

In all our travels in North Africa we found only one remnant of Roman agriculture which was saved from Arab destruction. The Roman culture of olives persisted in the area around Sousse and it was there we found groves of huge gnarled olive trees, quite probably planted by the Romans not less than fourteen centuries ago. No one knows how old they are. Rain gave us an opportunity to see how the Roman method of conservation of rain waters worked—how Arab farmers of today direct

storm water from basin to basin.

These ancient olive orchards are planted about fifty trees to the acre, as against the spacing of from ten to twenty feet in the modern plantings. An earth bank surrounds each basin in which from four to ten trees are planted. These basins are set at different levels, according to the topography. Thus each basin becomes a veritable reservoir which conserves all rain waters that fall against the needs of the long dry summers.



The old and the new. Above, a recent olive plantation near Sfax, Tunisia. Below, near Sousse, the only existing remnant of Roman culture of the olive, in which trees were planted in basins of banked earth designed to catch and store water



Furthermore, the water from the barren or closely grazed adjoining slopes is guided into the basins, and as soon as one basin is filled the farmer diverts the water to other basins. This method has proved its efficiency through the centuries. It prevents loss of soil by both wind and water erosion and conserves the greatest possible amount of moisture for olive culture.

Throughout the windswept plains in the region of Sfax, French archaeologists found numerous olive oil presses. These plains are dotted by (Continued on page 428)

# THE BAKER RIVER SALMON TAKE A RIDE

By EDWARD P. CLIFF

All Photographs by the Author

THE sockeye run in the Baker River in northwestern Washington was formerly one of the most famous salmon runs in the Puget Sound area. In addition to the sockeyes, or blueback salmon as they are often called, the Baker also supported a tolerable run of silver and chinook salmon and steelhead trout.

One of the most remarkable traits of the Pacific salmon is their uncanny homing instinct. They almost invariably return to their parent streams to spawn—usually to the same small tributary or section of the stream where they were hatched. After spawning, the adult salmon dies. The young usually remain in the stream for a year or two, then migrate to the sea. When they reach maturity—from two to six years, depending



A close-up of the Dam—286 feet high. Cables for hoisting the fish to the top may be seen in the upper right-hand corner



The power-house and fish-collecting system spanning the river. Here the fish are trapped between two parallel rows of wooden slats as they migrate upstream—and start on their ride to the lake beyond the dam

on the species—they fight their way back to their natal waters to spawn and complete their life cycle. Thus it is of utmost importance to keep open the migration lanes between the ocean and the spawning grounds if salmon runs are to be maintained.

In 1925 the survival of the Baker River salmon runs was seriously threatened by the construction of a high power dam near the confluence of the Baker and Skagit Rivers. The company building this dam followed the instruction of state fisheries officials in providing a fish ladder and cable car system to get the salmon over the dam. But the system was ineffective, and after four years of operation, during which time the salmon run was practically destroyed, a second and more elaborate system of trapping the fish at the power house below the dam and hoisting them over by use of an inclined railway and aerial cables was installed. The details of this system of mechanically transporting the salmon over the barrier are illustrated here.

After being released in the lake above the dam, the salmon are free to continue the journey to the headwaters of the stream. On their trip to the sea, the young salmon must make the long 286-foot drop over the dam, however. Undoubtedly some are killed, but the fact that adult salmon are returning each year proves that many make the dive successfully.

This ingenious system of transporting fish over a high dam appears to be successful in maintaining the remnant of the salmon run. Since the system was installed, a total of 98,600, or a yearly average of 10,955 salmon, have

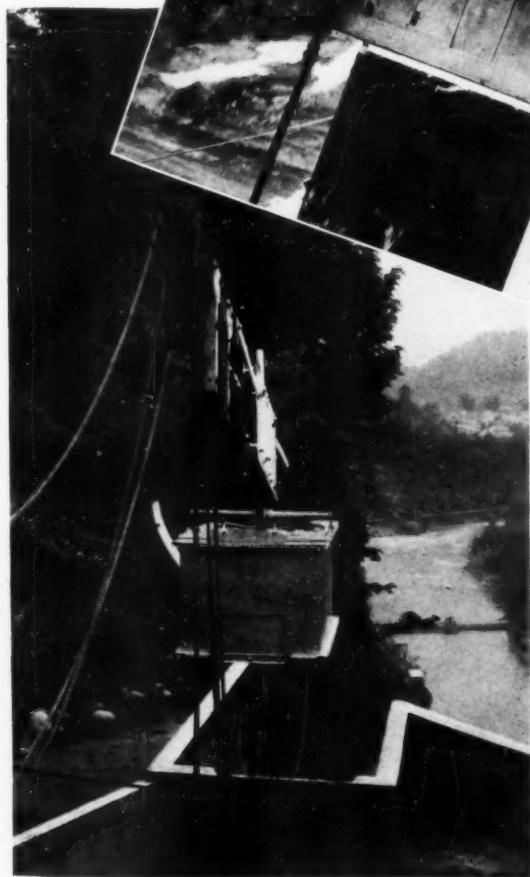
been hoisted over the dam. The low point was reached in 1928 when only 2,770 salmon reached the top. The high point came in 1935 when 23,245 salmon were given a ride. In 1938 the passengers numbered 17,575. The trend in recent years is upward, and it appears that the Baker River salmon run need never die.

Local observers are of the opinion that many of the sockeye salmon remain in Baker and Shannon Lakes instead of taking the drop over the dam and returning to the sea. These land-locked salmon are good game fish and provide excellent sport.

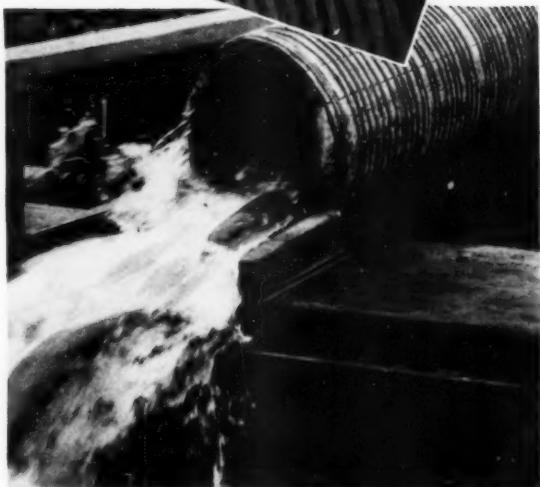
On the way!—  
the fish being  
hoisted and  
dumped. The tank  
car is then hauled  
up the inclined  
cableway toward  
the dam



Close-up of the collecting system. The current concentrates the fish in a center pen of the trap from which they are hoisted in a moveable cage in the inclined chute and dumped into a small tank car on top



Reaching the top, the fish are transferred from the metal tank into a wooden hopper and so across the top of the dam in a sixteen-inch wooden pipe—



—through the pipe and into a floating cage which, when full, is towed up the lake two or three miles from the dam and the fish released,—their ride over

# "THE COUNTESS"

By SAM MIMS

"THE COUNTESS" is not majestic, nor even beautiful. But no one can stand with unbowed head in her presence.

Her surroundings are depressing. Tumbled down log houses, decayed rail fences, eroded and abandoned fields, constitute her environs, for destructive man has robbed the soil and forests of all their beauty and wealth, leaving "The Countess" forlorn and lonely in an area that has been declared submarginal by the progeny of those who proceeded to ruthlessly destroy.

Her family name is "arbor vitae" and history upholds her proud demeanor and is disdainful of her bedraggled appearance. Although she has struggled against adversities in Louisiana for more than a hundred years, her birth place is Frankford-on-the-Rhine, Germany.

President Andrew Jackson, in 1829, wrote Count Leon a persuasive letter, urging that he and his friends abandon their homes along the Rhine and come to America to seek their fortunes. Responding to this invitation, a colony of three hundred Germans traveled, by circuitous route, through eastern United States and eventually settled in Claiborne Parish, Louisiana, where they set up a communistic colony.

A great many of the native trees were destroyed about the premises of the community center during the construction of a kitchen, dining room, a store, a bachelor's hall, and a lodge for married men, women and children. But while the men were felling trees, hewing logs and constructing buildings, Countess Leon was giving some thought to flowers, shrubs and trees.

Tradition leaves us the wholesome record that Countess Leon, with her own hands, planted near the dining room a number of shrubs, among them being one tiny arbor vitae that she had nursed during the long trip from Germany. The following fifty years, in spite of the strife

of civil war, this communistic colony prospered.

During these years of affluence the Countess tended her flowers and trees; and when the colony later became bankrupt, followed by dissension, and strife, the charming woman pruned and groomed her arbor vitae and other shrubs. Long after the marriage and departure of her daughters to distant states the aged woman hobbled among her beloved plants. The lands of German-

Town Colony are now in an area that has been declared submarginal, and the United States is offering to buy them back. In little more than one hundred years the forests have been devastated, the fields depleted of all fertility, leaving tumbled-down houses, and a lonely grave yard to remind the present generation that one century of ignorance can destroy more than five hundred years of intelligence can restore.

Perhaps it is for these reasons that "The Countess" appears so wise and so distressingly sad.

Unlike her kinsmen north of the forty-fifth latitude, the arbor vitae of the deep south remains a shrub, seldom reaching a height of more than fifteen feet. But "The Countess"—long ago named in honor of the woman who set the tiny tendrils in once fertile soil—is over fifty feet tall, and measures fifty-two inches in circumference.

"The Countess," as she looks today, doesn't seem proud of her size, her strength, her age—but there is tragedy in the quivering of her palsied boughs. Standing before her with bowed head, one almost expects to hear her begin chanting a dirge about the long, long ago.

Complacently she looks over the gulley-ribbed land about her, bows reverently to the tombs that mark the graves of the original colonists, and seems ready to utter the challenge: "I shall live on and on until Gabriel blows his horn, for my name is *The Tree of Life*."



"The Countess"—an old arbor vitae—truly a "tree of life," looks graciously down on the passing generations of men, spanning more than a hundred years

# EDITORIAL



## CONSERVATION TEAM-WORK

IN THE correspondence between President Roosevelt and Senator Pittman, published in last month's issue of this magazine, the President made reference to the fact that he is having a good deal of success in getting the public lands and forestry agencies of the Agricultural and Interior Departments to work together in such a way that the problem of coordinating the conservation activities of the two departments can be solved without drastic changes in organization.

What the President undoubtedly refers to is an inter-departmental committee which was set up in March by joint action of the Secretaries of Agriculture and Interior. The purpose of this committee is to serve as a clearing house for the consideration of questions and the adjustment of differences which arise between the Forest Service and the Park Service to the end that conflicts may be avoided and a coordinated program of conservation presented to Congress and the public.

The committee has been functioning since March. Its present personnel is: Ernest H. Wiecking of Secretary Wallace's office, and C. M. Granger of the Forest Service, representing the Department of Agriculture; Joel D. Wolfsohn of the General Land Office, and Colonel John R. White of the National Park Service, representing the Department of the Interior. According to reports its deliberations have been on a most friendly basis and in

an atmosphere of sincerely trying to resolve differences and to settle all questions in the public interest. This summer the committee plans to study a number of proposals of national park extensions involving national forest lands. Such proposals are usually controversial and the committee, it is said, intends to approach them in a judicial way by holding public hearings locally and weighing all viewpoints. Since the inception of the committee the respective heads of the Forest Service and the Park Service have issued instructions to their field personnel to refrain from any propaganda and other activities designed to build up public sentiment for or against projects within the purview of the committee.

The success thus far attending the efforts of the committee is one of the most encouraging developments in federal conservation in recent years. If the committee can bring to an end the intermittent warfare and confusion that has blighted the government's conservation house in recent years, it will render a service of great value. The public desires orderly public service. It has little toleration for inter-bureau controversies, particularly when they become chronic. More often than not, it looks upon them as symptoms of small and jealous minds. That the personnel of the committee is above this mediocrity and that its efforts are meeting with success should be cause for widespread gratification and support.

## FOREST PROTECTION IN ALASKA

SECRETARY Ikes and the Department of the Interior are to be congratulated on obtaining \$37,500 for the prevention and suppression of fires in the public domain forests of Alaska. This item is included in the Department's appropriations for the fiscal year 1940. While the item is small, it is of historic importance in that it represents the first tangible recognition by the Department and by Congress that the interior forests of Alaska are a great public resource that should be protected and preserved for the future development of the country. The appropriation will permit the beginning at least of organized forest protection in sections of the country that long have needed it.

Alaska is a region of vast natural resources. Ninety per cent of its land is still public domain—an area almost equal to that of all the public lands within the continental United States, including national forests, parks and monuments, Indian and military reservations and the unreserved public domain. Not the least of Alaska's public resources are its interior forests which as a rule are small timber forests but of great value for local development, potential pulpwood, soil conservation and wildlife protection. Since 1867, the date of the Alaskan purchase, the public domain has been under the steward-

ship of the Department of the Interior and forest fires have been allowed to run with the winds with the result that great areas have been burned over.

Secretary Ikes' recognition that his Department has a forest fire responsibility in Alaska is all the more commendable because it represented a decided reversal of position on his part. It will be recalled that a year ago the Secretary bitterly arraigned The American Forestry Association and the editor of this magazine for challenging his Department's failure to protect Alaska's interior forests from fire. He charged in effect that the challenge was ungrounded propaganda designed to embarrass his Department, and in defense of a do-nothing policy he asserted that Alaska contains no valuable timber for which his Department is responsible and that a forest fire patrol would be impossible because "human life cannot be sustained" in most of the country.

The Secretary, however, visited Alaska last summer. That he found the Association's challenge a valid one appears evidenced by the fact that during the winter he appeared before the House Committee on Appropriations, told it of Alaska's need of forest protection and received an initial appropriation to provide it. This, we think, was a forthright service to conservation that merits public recognition.



●  
● By A. E. MOSS  
●

## WHEN IT RAINED SALT WATER

THE DAY of September 21, 1938, will long stand out as a day from which to date events in eastern Connecticut. No more will the blizzard of '88 or the flood of '36 be the time reference. The great hurricane of '38 has replaced these.

The world knows generally what happened. Hurricane driven wind and rain; streams in flood; forests leveled; homes, highways, even the soil of the land itself destroyed. The inventory of the damage will never be completed. And to those of us who experienced even an hour of the devastating storm there are mind-pictures that will never be erased.

From the standpoint of forest destruction, the world also knows the essential facts. Thousands of words have been written about social and economic losses, about the immense task of salvaging and marketing the wind blown timber, about the great fire hazard created by the forests which fell like straw in the teeth of the gale. Little has been written, however, of the lesser conditions created by the hurricane, of the rather unusual after effects of storm winds and rain on certain forest areas and species — such as the effect of wind driven salt water on the conifers along the Connecticut coast line.

This damage first came to my attention shortly after the storm had spent its fury and it was again possible to visit the shore fronts. I was driving slowly around the end of one of the numerous tide inlets east of New London when I suddenly realized that a very familiar stand of young white pine appeared to have been burned since my last trip over the road. This seemed strange indeed for there had been no fire weather; nevertheless, the trees were brown and apparently dead. Approaching nearer I became more perplexed. Things didn't look just right. For one thing, the grass and seedlings, as well as the lower limbs of the trees, were green, showing no indication of fire. Further investigation revealed that the portion of the trees below the high water mark were normal in color, while that part above the high water mark was brown, or rather a bright orange, and apparently dead — making it appear from a distance as though fire had run through the stand. Had the needles been burned, of course, their color would have been more of a rust. I further observed that the needles had been killed back from the tip.

Needless to say, I watched for pine

trees the rest of the day. The farther I drove the more interesting the problem became. All white pine, it seemed, whether big or little, whether single trees in a hardwood stand or a broken shade tree on a lawn, had fared alike. Their needles were intact, but orange colored and dead.

The distance inland that this damage from hurricane driven salt water was apparent was surprising. Pomfret is forty-five miles from the ocean in the direction the storm had taken, and injured needles were discovered there — twigs which gave a salt reaction in the laboratory. The concentration of salt in the storm driven water was sufficiently dense to leave the characteristic deposit on the windows of my home, forty miles from the ocean.

Repeated trips over the area have brought out several interesting points. For instance, if not less than twenty per cent of the area was uninjured, needles have remained on the trees; all needles eighty per cent or more damaged have fallen and the buds of the tree appear dead. Whole trees near the shore and the sides of many trees several miles inland are devoid of foliage.

The outline of the damage is quite irregular and perhaps follows lines of high wind velocity. This, however, is not borne out by visual evidence as trees are just as badly damaged in the spray free areas as elsewhere. At the mouth of the Connecticut River, the injury showed but four or five miles inland. The greatest distance from the ocean where injury was discovered seems to be near Pomfret, forty-five miles inland.

There is no transition in wind damage to either pine or hardwood between the regions showing spray injury and the areas free from such injury. You drive along through the broken forest and the southeast side of the pines are tinged red brown. Your attention is diverted for a moment and when you look at the pines again the foliage is perfectly normal. In many places the dividing line is quite distinct.

Apparently the conifers vary greatly in their reaction to salt spray. The natural range of the species seems to have little influence on their resistance. The reaction is the same, however. Needles badly damaged fall within a month of the time of injury. White pine was by far the most sensitive of the conifers. There were a number of different species of pitch pine used as ornamentals or in

plantations within the area examined. These seem to have been damaged but little. The most resistant species seemed to be the Austrian pine. This tree, even within 300 feet of the ocean, shows no appreciable injury. The red pine was about on a par with pitch pine, with some injury showing within a mile or two of the ocean. This injury is the characteristic browning of the windward needles, rarely sufficient to cause defoliation. The Scotch pine was not as resistant as the other species and was also badly broken by the wind.

The spruces showed varying degrees of resistance. The injury was more difficult to evaluate except by careful inspection as the needles fell from the twigs almost immediately. This did not show discoloration at any time. Strange as it may seem, the Colorado blue spruce showed the greatest resistance of all the spruces. I would rate this tree, along with the Austrian pine, for areas subject to salt spray. The other spruces, if protected slightly, seem to have fair resistance. Rarely were entire trees killed, although the windward side near the ocean may have been devoid of needles.

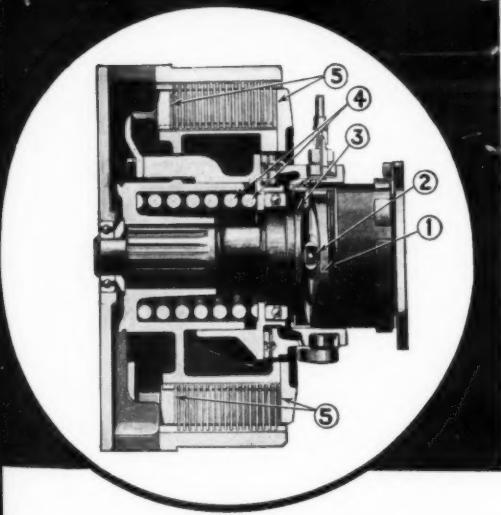
The hemlock also lost its needles immediately and appeared to be badly defoliated within one or two miles from the ocean. Protected trees were not badly injured. The fallen needles showed the same orange tinge that was characteristic of the white pine. The yew was found to be quite resistant. A number of specimens examined revealed that needles on rapid growing twigs had disappeared in a few instances but this species might well be added to the Austrian pine and the blue spruce as a very good ocean front evergreen.

Our native red cedar did not stand up quite so well. Entire trees were browned as if singed by fire. Examination of these, however, showed that within the dense sprays of foliage there may remain a few normal appearing leaves. Only time will tell how these trees will fare. The ground juniper showed evidence of injury second only to the white pine. Browned specimens were easily seen many miles inland. These, however, more or less present the same problem as the cedar as to eventual recovery.

One of our truly coast species, the coast or southern white cedar, was very badly hit. The stands which did not blow down were badly spray damaged if within a few (Continuing on page 432)

# Not an Ounce of Lazy Horsepower

## IN THE NEW INTERNATIONAL TD-18 DIESEL



**FINGER-TIP PRESSURE** releases the multiple-disc steering clutches in the TD-18...the engine, not the operator, does the work through power-release actuators built into the clutches. The cross-section view, above, shows how they work. Only enough pressure is needed on the clutch lever to move a friction surface against the rotating clutch hub. Cam (3) rotates about a quarter turn on rollers (2), which separate cams (1) and (3). Cam (3) compresses main clutch spring (4) and releases clutch plates (5).

The power-release actuators relieve the operator of the hard pull ordinarily required to operate slow-speed, multiple-disc steering clutches—saving his strength and reducing fatigue. In addition, the clutches are *fully engaged* or *disengaged*—no drag on the discs, no unnecessary wear and heating. Brake assistance is seldom required when there is a load on the drawbar.

A NEW DAY is here for users of heavy-duty mobile power! The new 70 h.p. International TD-18 Diesel TracTractor brings a new standard of operating performance and economy into the picture...more work, lower costs, bigger profits.

The power and flexibility of the International 6-cylinder *full Diesel* engine are coordinated to a fine point with other features in the TD-18...*a higher percentage of the maximum drawbar horsepower—70 h.p.—can be kept continuously applied to get more work done per day at lower cost.*

The engine starts easily and quickly from the operator's seat...no time lost by man or machine in getting on the job.

The TD-18 is the easiest steering crawler tractor built. Engine power, not manpower, releases the steering clutches through power-release actuators built into the clutches.

Six forward and two reverse speeds provide close selection of traveling speed to load without loss in engine r.p.m. or maximum horsepower capacity. Automatic clutch brake facilitates fast shifting of gears.

These features enable the operator to take full advantage of the power available...and make the TD-18 *unusually easy to handle and easy on the operator.*

Find out what the TD-18 offers for your jobs. The nearby International industrial power dealer or Company-owned branch will give you full details. Remember that there are five other TracTractors in the International line, also five wheel-type tractors, and eleven power units.

**INTERNATIONAL HARVESTER COMPANY**

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180 North Michigan Avenue

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### These Features Mean Efficiency, Low Cost, Long Life

1. Six-cylinder full Diesel engine.
2. Engine is started easily from the operator's seat.
3. Six forward and two reverse speeds.
4. Automatic clutch brake for fast gear shifting.
5. Easiest steering crawler tractor built. Power-actuated steering clutches.
6. Steering levers and pedals adjustable to suit operator.
7. Pivot shaft relieved of twisting stresses, and tracks kept in alignment, by ball-and-socket outer pivots, diagonal-arm inner pivot bearings, and roller stabilizer.
8. Track shoes keyed to track links to prevent loosening of shoes.
9. Triple-gear oil pump. Full-pressure engine lubrication at all working angles.
10. Positive track roller lubrication at all speed. Quintuple-sealed track rollers have patented gravity lubrication at low speeds and pressure lubrication at high speeds. Oil and dirt seal on both sides of sprockets. Self-cleaning idle wheel.
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# INTERNATIONAL INDUSTRIAL POWER



The Carbur subsistence tower site—one of Florida's new developments in forest fire protection

THE forest fire lookout has rightly been called "the eyes of the service"—meaning, of course, the protection service. Upon his vigilance and intelligence rest the fate of many acres of forest land, for a fire discovered and reported in its early stages is usually quickly brought under control with minimum damage. Consequently, it is vital to any fire protection organization to have the right type of men in the lookout towers.

Unfortunately, the employment of the right type of men for this purpose in the deep South has had its problems, financial, social and otherwise. In Florida, for example, fire control is largely in the form of state and federal cooperation with private landowners, the costs being paid out of a budget to which both the landowner and the public contribute. A half cent an acre is set aside annually for lookout service. Consequently, the funds available for a particular tower are directly proportional to the acreage listed within the effective range of the tower. The monthly salary is \$25 or \$35 but, even at that low scale, service is limited in most cases to from four to six months of the year. The reason—lack of funds.

Neither the rate of pay nor the briefness of the period of employment has been conducive to the most desirable class of personnel. Up to a few years ago the applicant was usually some shiftless sharecropper, futile farmer, or unemployed youth. No one else was interested. Better wages would have made possible better men but that depended upon greatly increased land listings. Increased listings depended upon an expanding landowner interest which, in turn, grew out of the slow process of demonstration and education.

Now Florida has answered this problem in the form of towersite subsistence farms, developed, in most cases, with the assistance of the Civilian Conservation Corps, and offering the lookout candidate some inducement other than a low, part-time, monthly wage. He is assured of a desirable home the year around, the basic elements for a farm program of his own choosing, and a cash income for at least a portion of the year. These neat, attractive farmsteads are also serving very effectively as public relations focal points.

The plan works like this: A minimum of ten acres is acquired either by gift or purchase. A development plan, adapted to the topography and possibilities of the particular site, is then drafted and approved. The layout of buildings is the first consideration in this plan and is governed by several factors. Their locations with respect to the fire tower itself, to roads or highways, and to each other are of primary significance.

The dwelling is located so as to face the road or highway, near enough to the tower to permit constant surveillance, and yet at sufficient distance to give the towerman's family a reasonable degree of privacy.

Occasionally, the tower site embodies a running spring with a good fall to its stream. Where such is the case, a ram is installed and the water delivered to a tank in the barnyard from which it may be piped. Usually, a well is drilled close enough to the kitchen door that the pump may be mounted on the back porch.

The landscape plan utilizes native materials, aims for general attractiveness, and provides a logical arrangement of drives and walkways. For the convenience of the visiting public, a parking ground is reserved at the foot of the tower.

The fencing plan includes gates, cattle gaps and both boundary and interior fence. Woven wire, four feet high, topped at a five-inch interval by a single strand of barbed wire, is mounted on heart pine or cypress posts. Twelve-foot gates, of either wood or metal, are standard. Since the barnyard and farm acreage proper are usually

## SUBSISTENCE FIRE TOWERS

By WILLIAM F. JACOBS

fenced off from the tower grounds, a cattle gap is necessary only where the public drive enters the grounds.

Normally, a minimum of two acres is cleared, fenced, and planted to an improved pasture grass. Three acres are cleared and broken for cultivation.

Buildings are wood throughout. The dwelling is of four rooms and depends for heat on its cook stove and an open fireplace. The highest type of barn is a two-story structure.

The farming program is left to the judgment and experience of the towerman selected, although normally determined by the soil quality and local practices. A subsistence program is all that is contemplated and includes chickens, a milk cow, one or two brood sows and the usual "truck patch" from which the family derives its customary vegetables and greens. A little patch of a cash crop, such as tobacco, is not unusual.

In short, the development, attractiveness, and livelihood possibilities of these miniature farms command the respect of rural people generally. Needless to say, the calibre and morale of the towerman personnel has definitely improved, to say nothing of gains made educationally through the favorable impression on and reaction of the general public.



View of one of the new ten-acre farmsteads from its fire tower before landscaping

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# FECHNER REVIEWS SIX YEARS OF CCC CONSERVATION WORK

## Director Reveals that 2,500,000 Young Men Have Engaged in 150 Types of Conservation Work

A PROGRESS report covering the work output of the Civilian Conservation Corps during the six years that the Corps had been in operation up to April 1, 1939, has just been made public by Director Robert Fechner. This report provides a full statistical record of all work completed by the 2,500,000 young men, war veterans, Indians and territorials who have labored for varying periods of time in the camps. All told, enrollees under the experienced technical direction of the conservation services of the Department of Agriculture, the Department of the Interior, and state and local governments, engaged in more than 150 types of work and advanced a nationwide conservation program which embraced projects in every state of the Union and in Alaska, Puerto Rico, the Virgin Islands and Hawaii.

The report shows that the Corps completed a tremendous amount of work in such fields as the reforestation of waste lands; the improvement of timber stands to stimulate rapid and healthy growth; the protection of timbered areas from forest fires, tree attacking diseases and insects and other forest pests; the improvement and development of forests and parks; the improvement and protection of farm lands endangered by soil erosion, and the rehabilitation of drainage ditches in agricultural areas; the improvement of grazing conditions in the national forests and on the public domain; water conservation and flood control and the improvement of conditions for big game, migratory birds and other forms of wildlife.

Included among the many projects completed by the Corps were the planting of 1,741,000,000 trees, the construction of 104,000 miles of truck trails or minor roads, the erection of 71,692 miles of telephone lines, the construction of 40,000 bridges, the construction of more than 45,000 buildings, the reduction of fire hazards over about 2,000,000 acres, the building of 4,700,000 check dams in gullies, the construction of approximately 16,000,000 rods of fence, the improvement of 3,312,498 acres of forest stands, the construction of 5,390 impounding and large diversion dams, the development of 20,084 springs, wells, waterholes and small reservoirs and the expenditure of about 9,000,000 man days fighting forest fires and on fire prevention and fire suppression activities.

"When the CCC was founded its twin objectives were to conserve unemployed youth and to conserve and restore natural resources," Director Fechner said. "It was the conviction of those in charge of the CCC program that these objectives could best be effected through putting young men to work on outdoor projects in our forests and fields where the boys would be taught how to work and where the work completed would be of definite value to the nation. To make such a program effective it was necessary that the work

be carefully chosen, that all work be carefully supervised, and that enrollees, in return for the government's investment in their future, should put in an honest day's work each day.

"As a first move the Department of Agriculture and the Department of the Interior developed a conservation work program, nationwide in scope, which had as its major objectives the gradual up-building and development for public use of our natural resources of timber and soil. Conservation forces, both federal and state, were mobilized to execute the work program.

"I am proud of the fine performance record which the young men, war veterans, Indians and residents of Hawaii, Alaska, the Virgin Islands and Puerto Rico have made over the six years and three months that the Civilian Conservation Corps has been operating. An overwhelming majority of the men who are working and who have worked in the CCC camps were inexperienced in any kind of work when first enrolled. These men had to be taught to work. They had to be trained to do the wide variety of conservation tasks that make up a part of the CCC's daily work program. The speed with which these green youngsters have learned to work efficiently on all sorts of jobs was a source of gratification to every person connected in any way with the CCC program. As a result the CCC has been able to turn out a tremendous amount of work.

"Examination of the Corps work record shows that enrollees more than tripled the output of federal and state tree nurseries and planted 1,554,000,000 seedlings for reforestation purposes on waste lands and 187,000,000 seedlings in gullies and on other farm lands to protect the land from erosion. During the same period, the Corps, through forest fire protection activities prevented the destruction of thousands of acres of naturally propagated seedlings, thus aiding the reforestation program. The Forest Service, which supervises plantings on public forest lands, recently advised this office that it would like to use enrollees for the plantings of an additional 4,500,000,000 seedlings over 4,500,000 acres of public lands.

"The work which the Corps is doing in erosion control is proving of great practical value. Working under the supervision of the Soil Conservation Service, enrollees have assisted in conserving soil resources on 13,000,000 acres of farm and grazing lands. They have helped farmers in all sections of the country to control gullies, construct terraces, plant trees and do many other kinds of work which assist in soil fixation. In this field the Corps has constructed 4,700,000 check dams, seeded and sodded 380,000,000 square yards, constructed 54,000,000 linear feet of diversion ditches, completed 22,400 miles of terraces, 28,000,000 feet of terrace channel construction and 337,000 outlet

structures. The result has been not only to improve the use of the land as a physical resource but to establish a sounder farm economy.

"Enrollees have improved and expanded recreational facilities in national and state forests and in national and state parks and related areas. In national and state forests additional camping grounds and facilities have been provided, streams have been improved for fishing, and needed buildings have been constructed. In both national and state parks, the work of the CCC has been aimed at protection, conservation and development for use according to well laid plans worked out for each area. Projects have been completed for forest protection and improvement, erosion control, stream bank protection, construction of picnic areas, overnight cabins, horse and foot trails and bridges, dams to impound water for swimming and boating and various other types of jobs for the general conservation of these areas. All told the Corps has worked in approximately 1,000 national and state parks and related areas.

"State park development was greatly expanded by the CCC. Working under the supervision of the National Park Service, which supervises CCC work in park areas, enrollees have built new recreational improvements and facilities into hundreds of state parks. Since 1933 state park acreage has been substantially increased. Prior to that year there were 816 state parks and related areas with a total acreage of 3,310,691, throughout the country. Today there are 1,397 such areas, totalling 4,332,000 acres, an increase of better than 1,000,000 acres.

"In addition to its reforestation, erosion control and recreational development activities, the Corps has helped to improve grazing conditions in western states, aided in the rehabilitation of reclamation projects, carried on valuable flood control work, the most notable example being the completed Winooski River Flood Control project in Vermont, aided farmers by rehabilitating silted drainage ditches, aided the federal Biological Survey in the development of a nationwide chain of wildlife refuges, built fish hatcheries and planted more than 643,000,000 fingerlings and young fish in lakes, ponds and streams; spent thousands of days in emergency rescue work, searching for lost persons, aiding after automobile accidents and engaging in other activities of this nature.

"The work record includes such items as the construction of fifty-five airplane landing stations, sixty-five radio stations, development of 4,264 fish rearing ponds, the quarrying for erosion control purposes of 1,938,000 tons of limestone, the construction of 2,580 miles of stock drives, completed timber estimates on 33,381,000 acres and carried out rodent control operations over 32,600,000 acres."

## State Sovereignty over Federal Lands

THE state's sovereign power to regulate hunting and trapping on federally owned lands within its borders is defended in an opinion recently submitted to the Wisconsin Department of Conservation by the State's Attorney General. The opinion is significant not only to the specific area which has been recently reserved as a federal wildlife refuge in Wisconsin, but to federal land acquisitions within all states.

Referring to President Roosevelt's Executive Order of March 14, 1939, establishing the Necedah Migratory Waterfowl Refuge of 40,500 acres in west central Wisconsin, Attorney General John E. Martin advised "that the sovereignty and jurisdiction of the State of Wisconsin include the area described in the Executive

Order and that in so far as the order attempts to assert federal criminal jurisdiction over the area in connection with hunting and trapping, it is void." He further claims that the state has "legal title to and the custody and protection of all wild animals" within its boundaries, and declares "it is the duty of the governor and all of the subordinate officers of the state to maintain its sovereignty and jurisdiction."

The Executive Order referred to provides, among other things: "It is unlawful for any person to hunt, trap, capture, willfully disturb, or kill any bird or wild animal of any kind whatsoever within the limits of this refuge, or to enter thereon except under such rules or regulations as may be prescribed by the Secretary of Agriculture."

## Organize for World Forestry Congress

RESPONDING to an invitation from the Government of Finland to participate in the Third International Forestry Congress to be held in Helsinki, Finland, July 1 to 5, 1940, United States agencies are organizing for American representation. The State Department has brought the official invitation to the attention of all governmental departments and agencies having to do with forests. Also, forestry schools and other organizations interested in forestry have been notified of the Congress.

The Government of Finland has suggested that America organize a committee to serve as a clearing house for the selection of American delegates and for making necessary arrangements for all others in this country who desire to attend the Congress. In line with this suggestion, an informal meeting was held in Washington on July 6, when the first steps were taken looking to the organization of such a committee. In the absence from Washington of F. A. Sileox, chief of the Forest Service, C. L. Forsling, at the suggestion of the State Department, called the meeting. In addition to representatives of various government bureaus and departments concerned with forestry, representatives of a number of non-governmental conservation agencies were present. The meeting resulted in the setting up of a permanent committee with F. A. Sileox honorary chairman; C. L. Forsling, of the Forest Service, chairman; John B. Guthrie, of the Civilian Conservation Corps, vice-chairman; and Henry E. Clepper, Society of American Foresters, secretary.

It was the sense of the meeting that the following federal departments, agencies and organizations should be represented on the committees by at least one member: The United States Departments of Agriculture, Interior, and Commerce, the Civilian Conservation Corps, the Society of American Foresters, The Association of State Foresters, the American Forestry Association, the Charles Lathrop Pack Forestry Foundation, the National Lumber Manufacturers Association, the American Paper and Pulp Association, and the forestry schools.

The committee is desirous of knowing the names of all persons who are interested or planning to attend the Congress, and asks that they notify the secretary, Henry E. Clepper, the Society of American Foresters, Mills Building, Washington, D. C.

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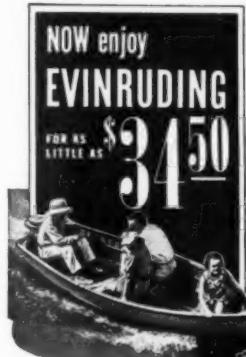
(See Page 431)



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## Joint Committee on Forestry Meets in East

MORE federally owned forests to provide opportunities for gainful work by thousands now unemployed, extension of forest cover to retard and divert the flow of surface water, additional studies preparatory to the control of tree diseases, federal regulation of all forest lands, a broader program of education for farm woodland management, and more effective protection of forests against fire were keynotes in testimony presented by citizens of seven east central states during hearing of the Congressional Joint Committee on Forestry in Washington on June 30 and July 1.

The sessions were presided over by Senator John H. Bankhead, 2d, chairman of the Joint Committee, who asked repeatedly for specific suggestions for future legislation. He also expressed interest in legislation which would protect forest owners against the low price offers of unscrupulous timber buyers. To help accomplish this, Professor Victor Beede, of Pennsylvania State College's Department of Forestry, proposed federal aid in the development of de-

tailed inventories of farm woodland and market studies which would serve as the basis for subsequent educational programs. Dr. Julian Duncan, of the Babson Institute, spoke directly on the question of federal regulation and was requested by the chairman to prepare a draft of a bill which would cover his ideas.

Sitting with Senator Bankhead during the hearings were Senators D. Worth Clark and William J. Bulow, and Representatives Wall Doxey, Hampton P. Fulmer, and Walter M. Pierce. Among those who presented statements were M. E. Mesavage, of Wilkes Barre, Pennsylvania; Dr. W. H. Thompson, chairman of the Kentucky Fish and Game Commission; Blandford Hall, of Virginia; Thomas B. Symons, of Maryland; and State Foresters Fred C. Pederson, of Virginia, and Fred W. Besley, of Maryland.

The Joint Committee indicated intentions of holding further hearings in the Northeast, the Lake States, the Gulf States region and the Pacific Northwest, but dates were not announced.

## Sustained Yield Authorized in Washington

AUTHORITY to cooperate with the federal government and private owners of timberland in establishing and administering sustained yield forest units is extended by recent action of the State of Washington by recent action of the State Legislature.

The new law applies equally to state forest board lands and state granted lands. It empowers the respective administrative officers to outline the units of operation and enter into agreements limiting the cut-

ting from the combined national and state forest lands, to their sustained yield capacity. Private owners may also include their lands in the units, but must agree to limit production to an amount specified by the state officers.

All timber sales are to be made on the basis of competitive bids. Approval of the sales may be contingent upon the permanence of the local communities and industries, the prospects for fulfillment of the contract requirements, and the financial status of the bidder.

## Dutch Elm Disease Work Awaits WPA Funds

WITH the beginning of the new fiscal year July 1 most of the forces engaged in Dutch elm disease eradication work marked time awaiting the release of the first month's apportionment of WPA funds made available by the belated passage of House Joint Resolution 326. Such scouting work as could be done with crews paid from the \$500,000 appropriated in the Agricultural Supply Bill proceeded as scheduled, but officials reported that no WPA financed work had been done since June 24, when last year's allotments were exhausted.

The present year's work now has the promise of \$1,965,065 from WPA to be divided equally through the twelve months of the coming year. This compares with \$2,951,500 made available during the last fiscal year. The significant feature as pointed out by William P. Wharton, chairman of the National Conference on Dutch Elm Disease Eradication,

is the fact that the temporary lapse of WPA funds has disrupted the work of laboratory determination of diseased specimens and field removal of diseased trees.

Reports from the field indicate encouraging results in all previously infected areas with the exception of the northern extension in Dutchess County, New York. In June diseased trees were found in Pine Plains Township in the extreme northeast corner of the county within ten miles of the Berkshires of western Massachusetts. Discovery of infections in Connecticut and New Jersey show a marked drop, while the previously reported infections in Pennsylvania, Maryland, West Virginia, Ohio and Indiana are all under control.

The discovery of the Pine Plains infection extends the infected area within New York State from 2,671 square miles to 2,702—an expansion of a little over thirty square miles.

## National Forest Purchases Sought

DECLARING that any authoritative opinion in opposition to the use of Weeks Law funds for the purchase of forest lands with special recreational possibilities will be followed by efforts to make such action legal by amending the act, the National Forest Reservation Commission on July 6 postponed action on several areas presented for consideration.

The question was carried over from the meeting of June 1, when Secretary Ickes questioned the legality of participating with the WPA in the purchase of 2,700 acres in the Ozark unit in Arkansas. The proposal, submitted by Representative David D. Terry, depends upon the erection of a dam on Mulberry River to create what may be known as Cass Lake, the construction of which would provide extensive employment and ultimately a much needed opportunity for outdoor recreation.

At the meeting of July 6, Secretary Ickes referred to an adverse opinion of the Solicitor of the Department of the Interior. By action of the Commission, the Secretaries of War and Agriculture will request opinions by their solicitors and later the question will be referred to Attorney General Murphy. Should this opinion be opposed to purchases of land with recreational possibilities, the Commission went on record as favoring the amendment of the Weeks Law so as to make such purchases legal.

The Commission on July 6 also rescinded its regulation of January 30, 1936, under which no land has been approved for purchase in units with less than twenty per cent of the available land in federal ownership. As a result, some portions of the new \$3,000,000 appropriation may be used for the purchase of lands in Ohio, Illinois, Iowa, and Kentucky where few additions have been acquired within the established units.

This latter action was in response to personal appeals by Senator Sherman Minton, of Indiana, and Representatives Kent Keller, of Illinois, with Thomas A. Jenkins and Robert T. Secrest, of Ohio.

Senator Minton brought out the disparity of land purchases for Indiana, Ohio, and Kentucky as compared with other states whose purchase program was well under way before the twenty per cent regulation was adopted.

### C. S. JUDD DIES IN HAWAII

C. S. Judd, chief forester of Hawaii from 1914 to 1937, died at Honolulu on June 29. Born in Honolulu, Mr. Judd was educated at Yale University, receiving his B.A. degree in 1905, and his Master of Forestry degree two years later from the Yale Forest School. In 1907 he became associated with the federal Forest Service at Washington, D. C., as a forest assistant in the Office of Management. The following year he was transferred to the regional office at Portland, Oregon, as assistant chief of silviculture. From there he returned to Hawaii to devote his full time to the development of forestry program for the Islands. He retired from active duty in 1937.

On July 10 Representative Jenkins described this meeting before the House, declaring: "I confidently believe that during the next year the Forest Service will again be in the market for the purchase of lands in the various Ohio units. It should purchase immediately all the land that it has under option and other lands upon which the options have expired."

Representative Keller urged the Commission to approve purchase of 18,500 acres in southern Illinois, in the Kinkaid Creek region, where, he said, forest denudation and erosion had dangerously reduced the former high productivity of the land, and where the unemployment problem is severe. He said that in his opinion reforestation, watershed management and flood control would be the best means of rehabilitating the area.

Before adjourning the Commission approved the purchase of 19,026 acres of land in twelve states and Puerto Rico at a cost of \$83,675. These are the first expenditures under the new appropriation of \$3,000,000 for the present fiscal year. Extension was also approved of the boundaries of four purchase units in Alabama, Arkansas, Florida, and Georgia to include 486,860 acres purchased by the Resettlement Administration, which increased the gross area of the units by 714,660 acres.

The largest purchase unit increase is that in the Apalachicola unit in Florida, where the gross area proposed for inclusion was 348,000 acres, of which 285,000 acres had been or were in process of being acquired by the Farm Security Administration or its predecessors. The additional acreage recommended for the unit was deemed requisite to consolidate the government holdings.

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FEW OWNERS of large trees have the inclination or the agility to do their own pruning and they usually leave this to experienced climbers. It is well, however, to understand something of the mechanics of the operation so that one can judge the ability of the tree worker he employs, or so that he himself may prune in the proper manner those limbs which are reached most readily.

There are many types of tools available for special purposes but most experienced arborists prefer, for general all-around work, a coarse toothed hand-saw with a stiff tapered blade and hornless handle. For large cuts, one man cross-cut saws are available, and for working in tight places a ribbon type adjustable blade saw is frequently desirable. For high work and places difficult to reach, pole pruners and pole saws will be found useful. Double edged saws should be avoided, however, due to the safety hazard and the danger of nicking the bark unintentionally.

It is a pleasure to watch a man working in a tree if he knows his business. He plans his work well enough in advance so that as he makes his way from one part of the tree to another by means of his safety rope he resembles Tarzan in action.

In normal shade tree pruning the experienced person will start his work at the top of the tree and work downward. In this way hanging branches may be re-

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### PRUNING PRACTICES

moved without retracing his course. In general, dead wood is removed first, along with small intersecting limbs. Large live limbs should not be removed without carefully considering the result since their removal might create an undesirable hole in the crown. Diseased or borer infested wood is usually removed whether completely dead or not.

It is, of course, necessary to remove any limb back to a sound crotch so that vigorous cambium tissue surrounds the pruning cut. Branches over an inch or two in diameter preferably are removed with a multiple cut to avoid stripping

the bark and wood. A preliminary undercut is made about a foot beyond the final cut and sawing at this point should continue upwards until the saw binds. A second cut is made on top of the limb an inch or two beyond the undercut, sever-

ing the limb. Finally, the stub is removed as nearly flush as possible with the parent trunk or limb. Round or heart-shaped cuts should be trimmed to an elliptical shape with a gouge and mallet to encourage healing, and protruding lips should be cut off in order to avoid die-back and water pockets.

To complete the treatment it is necessary to paint the cut surface with a good grade of tree-wound dressing. Unfortunately, the perfect dressing has not yet been discovered but for general purposes an asphaltic base paint is fairly satisfactory. Lead paints or those with a high creosote content are apt to be less durable and even injurious.

It is useless to paint freshly made cuts if the surface is wet, as the dressing will rarely stick and, even if it does, water blisters will probably appear under the surface. A better practice is to wait until the wound is dry to apply the dressing. Until a more durable dressing is available it is well to redress old wounds—especially large ones—each year. A stiff wire brush is useful to remove loose flakes and blisters before the new coat is applied.



FIG. 1



FIG. 2

Sketch by the Author

Proper pruning cuts exemplified. Fig. 1 is a normal branch cut while Fig. 2 is a V-crotch. Preliminary cuts are made at A and B, after which stubs are removed at C

Occasionally it will be noted that cuts and wounds continue to drain for a long period. This condition is difficult to correct but it has been found that excessive seepage or fluxing of tree wounds may be locally retarded or stopped by tapping at the tree base to decrease the heart-wood pressure. This matter of slime-flux will be discussed more extensively in a subsequent article.

It is often necessary to remove one of two limbs which have developed so nearly parallel that a very tight V-shaped crotch has been formed. Such a structure is relatively weak due to the layers of bark and non-connecting woody tissue which have been built up between the limbs. It is often desirable to brace such limbs together but not infrequently it may be necessary to remove one of them. The real junction of the limbs may be one or several feet below the apparent point of separation and the final pruning cut must be made at the real junction to heal properly.

Many people feel that suckers and watersprouts weaken a tree and so should be removed as they appear, but since they are often nature's way of indicating trouble or a changed environment, it is good judgment to determine the cause before removing them entirely. The removal of a large limb close to a small branch may result in excessive sprout development, or the growth may arise from such causes as changing environmental conditions; structural injuries; or as a result of certain diseases. They are also caused—too frequently—by excessive or incorrect pruning practices.

Base suckers usually are of no benefit to an ornamental tree and detract from the appearance of the tree as a specimen. They should be removed, usually, as they develop. Trunk and limb sprouts on some species such as elm should be allowed to develop, since moderate suckering on the trunk is normal under certain conditions.

If the suckering is an apparent attempt by the tree to provide shade for the trunk or limbs after protecting trees have been removed, the suckers should be left—or possibly given a careful thinning—in order to prevent sunscald and as a means of filling out the crown on a weak side.

## National Shade Tree Conference

The National Shade Tree Conference has announced that its fifteenth annual meeting will be held at the Hotel Astor, New York City, August 22, 23 and 24. An elaborate program, consisting of twenty-five papers dealing with problems related to the care of trees and exhibits and demonstrations of tools, materials and equipment, has been completed.

Composed of arborists and others engaged in tree preservation, research and regulatory work pertaining to shade tree welfare, the National Shade Tree Conference is a notable and unique organization. It has been largely responsible for the recent advancements in arboriculture.

The removal of old, partially healed stubs often reveals more or less decay which has resulted from infection by rot-producing fungi. If the decay is slight it can be chiseled out, and the wound shaped and painted by the pruner. If extensive decay is present, however, it is better to leave the wound unpainted and unexcavated until more complete treatment can be given as it is, of course, valueless to paint over decayed wood.

Pollarding, or dehorning, as it is sometimes called, is a process which shade trees rarely require in spite of the frequency with which we see trees mangled by cutting them back severely.

It sometimes happens, however, that a valuable old tree has been weakened by insects, decay, or environmental disturbances and it is desirable to prolong its life a bit by reducing the weight or wind resistance of the crown. The chief dangers in a dehorning process are found in the decay which is almost sure to follow at the dehorning points, and the sunscald permitted by the reduced canopy. Species which do not readily form adventitious buds or suckers rarely are benefited by this type of pruning which in unskillful hands may be more harmful than beneficial.

When dehorning is clearly necessary, the practice of pruning back to a live lateral should, of course, be followed. All branches should rarely be cut back severely the same season, however; rather the program should be extended over three or four years to minimize shock. The whole program should be carefully planned in advance to assure that the ultimate form of the crown will be a desirable one.

It is sometimes desirable to prune trees which are infected with a virulent disease—maple wilt, fire blight, or elm wilt, for example. Great care must be exercised under such conditions to prevent the pruning tools acting as spreaders of the disease. Saws and pruners used in this work should be carefully wiped off or dipped in a solution of bichloride of mercury or alcohol between each cut.

The old gardeners' rule—prune close and paint—is always followed by the careful pruner.

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## CONSERVATION CALENDAR

Important Bills in Congress with Action  
June 13-July 12, 1939

### BILLS ENACTED

**H. J. Res. 322**—**RUSSELL**—Making an additional appropriation for the control of outbreaks of insect pests. Passed House June 12, 1939. Passed Senate June 12, 1939. Signed by the President June 13, 1939. Public Resolution No. 22.

**H. J. Res. 326**—**TAYLOR**—Making appropriations for work relief, etc., for the fiscal year ending June 30, 1940. Passed House June 16, 1939. Passed Senate June 28, 1939. Signed by the President June 30, 1939. Public Resolution No. 24.

**H. R. 6260**—**SNYDER**—War Department Civil Functions Appropriation bill. Passed House May 15, 1939. Passed Senate amended June 2, 1939. Signed by the President June 28, 1939. Public Law No. 154.

**H. R. 5269**—**TAYLOR**—Making appropriations for the Department of Agriculture and for the Farm Credit Administration for the fiscal year ending June 30, 1940. Passed House March 28, 1939. Passed Senate amended May 12, 1939. Signed by the President June 30, 1939. Public Law No. 159.

**H. R. 6970**—**TAYLOR**—Third Deficiency bill. Passed House June 23, 1939. Passed Senate amended June 29, 1939. Signed by the President June 30, 1939. Public Law No. 160.

### LANDS

**S. 231**—**McNARY** (H. R. 6853)—**ANGELL**—To authorize the acquisition of forest lands over which highways, roads, or trails are constructed or to be constructed with federal funds in order to preserve or restore their natural beauty. Passed Senate June 13, 1939. Referred to the House Committee on Agriculture June 14, 1939.

**H. R. 6503**—**MOTT**—Relating to the exchange of certain lands in the State of Oregon. Passed House July 6, 1939. Referred to the Senate Committee on Public Lands and Surveys July 7, 1939.

### NATIONAL FORESTS

**S. 229**—**McNARY**—To authorize the withdrawal of national-forest lands for the protection of watersheds from which water is obtained for municipalities. Passed Senate June 13, 1939. Referred to the House Committee on Agriculture June 14, 1939.

**H. R. 168**—**IZAC**—To add to the Cleveland National Forest, California, certain contiguous lands of the United States which can be most effectively and economically protected and administered as parts of said national forest. Passed House July 6, 1939. Referred to the Senate Committee on Public Lands and Surveys, July 7, 1939.

**H. R. 2415**—**ENGLEBRIGHT**—To authorize the addition of certain lands to the Plumas National Forest in California. Passed House July 6, 1939. Referred to the Senate Committee on Public Lands and Surveys July 7, 1939.

**H. R. 2548**—**MARTIN**, Colorado—To include within the Pike National Forest certain lands acquired or in course of acquisition by the United States. Passed House July 6, 1939. Referred to the Senate Committee on Public Lands and Surveys July 7, 1939.

**H. R. 2752**—**LEAVY**—To include within the Kaniksu National Forest certain lands owned or in course of acquisition by the United States. Passed House July 6, 1939. Referred to the Senate Committee on Public Lands and Surveys, July 7, 1939.

**H. R. 5404**—**PIERCE**—To extend the provisions of the Forest Exchange Act, as amended, to certain lands so that they may become part of the Ochoco National Forest, Oregon. Reported without amendment (Report No. 1031) by the Committee on Agriculture July 5, 1939.

**H. R. 5747**—**LEAVY**—To authorize the addition of certain lands to the Wenatchee National Forest. Passed House July 6, 1939. Referred to the Senate Committee on Public Lands and Surveys July 7, 1939.

### NATIONAL PARKS

**S. Res. 147**—**ASHURST**—Authorizing the Committee on Public Lands and Surveys to make a thorough investigation of all questions relating to the proposed enlargement of Rocky Mountain National Park. Introduced June 20, 1939. Referred to the Committee on Public Lands and Surveys.

**S. 2622**—**ADAMS**—To provide for the establishment of the Green Mountain National Park in the State of Vermont. Introduced June 15, 1939. Referred to the Committee on Public Lands and Surveys.

**S. 2624**—**ADAMS**—With regard to the limitation of cost upon the construction of buildings in national parks. Passed Senate July 6, 1939.

**H. J. Res. 348**—**HORTON**—To prohibit any water or power development within the Yellowstone National Park. Introduced June 30, 1939. Referred to the Committee on the Public Lands.

**H. R. 6959**—**HORTON**—To abolish the Grand Teton National Park in Wyoming and to transfer the lands, improvements, and facilities of the United States within the boundaries of said park to the Teton National Forest. Introduced—June 22, 1939. Referred to the Committee on the Public Lands.

## FORESTRY IN CONGRESS

By G. H. COLLINGWOOD

WORKING against the deadline of expiring funds, Congress passed the Agricultural Appropriation bill in time to be signed by the President on June 30, a few hours before the beginning of the new fiscal year on July 1. The act provides the Forest Service with \$20,294,466—an increase of \$734,066 over last year's funds and \$467,181 above the amount recommended by the Bureau of the Budget. Among activities receiving increases are forest fire cooperation under the Clarke-McNary Act and the acquisition of forest lands for national forests. For the first time in history the Clarke-McNary appropriation crosses the \$2,000,000 line and stands at \$2,200,000—an increase of \$200,000 over last year. The new appropriation for forest acquisition continues at \$3,000,000 as against a budget recommendation of \$2,000,000.

Small increases are likewise given the Forest Products Laboratory at Madison, Wisconsin, with an appropriation of \$664,181, forest range investigation with \$245,935 and forest economic studies with \$149,295, of which \$18,000 is for studies in the anthracite region of Pennsylvania to correlate forestry work with unemployment. Forest experiment stations were reduced to \$613,403, but a new item of \$30,000 adds a tropical forest experiment station in Puerto Rico. Continuing as of last year are the forest survey—\$250,000, forest influences—\$139,152, private forestry cooperation—\$100,000, and cooperative distribution of forest planting stock—\$100,000. There is no money for cooperative land purchases under the Fulmer Act.

Supplementing the above is \$10,000,000 for forest roads and trails.

The Norris-Doxey Cooperative Farm Forestry Act, administered under the Soil Conservation Service, receives \$300,000 which is additional to the total of \$23,720,584 to this bureau.

Farm forestry extension through the several land grant colleges was increased from \$56,838 to \$77,898.

Of interest to American Forestry Association members is an appropriation of \$500,000 for Dutch elm disease eradication. This increase of \$121,511 includes special responsibility for the control or eradication of the virus disease of the elm in the Ohio Valley.

The Bureau of Entomology and Plant Quarantine also received \$375,000 for control of gypsy and brown-tail moths, \$300,000 for white pine blister rust control, and \$253,100 for investigations in forest insects.

Forest tree disease investigations under the Bureau of Plant Industry was increased from \$255,392 to \$265,392, to

finance studies of London plane tree disease now active in the vicinity of Philadelphia and Baltimore.

House Joint Resolution 326, making appropriations for work relief and PWA, was approved in time for the President's signature before midnight of June 30. This includes \$60,000,000 for federal projects, of which the Bureau of Entomology and Plant Quarantine receives \$5,121,700. Tentative allotments include \$1,205,709 for white pine blister rust control, \$1,965,085 for Dutch elm disease eradication, and \$640,845 for gypsy and brown-tail moth control. The Forest Service receives \$5,184,200 for reduction of fire hazards on national forests, development of recreation areas, and general improvements. Also included is \$750,000 to continue the National Resources Planning Board for another year.

The Interior Appropriation Act, signed by the President on May 10, carries \$37,500 to inaugurate forest fire protection in Alaska outside the Chugach and Tongass National Forests. The same act carries \$150,000 for administering and protecting the O and C revested lands in Oregon. National parks and monuments receive \$3,931,420, of which \$160,000 is allotted to protection and prevention of forest fires, with \$100,000 to be drawn at the Secretary's discretion. In addition, \$3,500,000 is for roads and trails, and \$4,500,000 for the Blue Ridge and Natchez Trace Parkway.

(Continuing on page 427)

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COLOR PHOTOGRAPHY FOR THE AMATEUR, by Keith Henney. Published by the McGraw-Hill Book Company, New York. 281 pages. Illustrated. Price \$3.50.

A practical book, telling how to make transparencies in color with Kodachrome, Dufaycolor, Finlay, and Agfa color materials; how to make prints on paper by the Chromatone, Carbro, Wash-Off Relief, and the Colorstill processes; how to make separation negatives; how to make prints from Kodachrome and Dufaycolor. The apparatus necessary for each process is described, giving brand names; estimates are made of the cost; hints and details of operation picked up from other color workers, and manufacturers.

HEDGES, SCREENS AND WINDBREAKS, by Donald Wyman, Ph.D. Published by Whittlesey House, McGraw-Hill Book Company, New York. 249 pages. Illustrated. Price \$2.75.

Although interest in hedges is marked, no one has attempted to bring into book form the knowledge now available concerning them. This book satisfies a long-felt need for a detailed and practical treatment of this essential phase of gardening and landscaping. Chapters include the use of hedges and screens, planting practices, care after planting, trimming, ornamental hedges for special situations, plants for special purposes and particular regions.

ANIMALS WITHOUT BACKBONES, by Ralph Buchsbaum. Published by the University of Chicago Press, Chicago, Illinois. 371 pages. Illus. Price \$5.00.

Science is made fascinating by the series of *New Plan* science books issued by the University of Chicago, for they are not popularizations but science itself, and written by inspired scientific teachers. This latest one, on invertebrates, guides the way to the world of worms—a little understood world but one which comprises 95 per cent of the animal kingdom. Here you will find, fascinatingly told, the life histories of most of the creatures that pursue their divergent careers without benefit of backbone—from the lowly ameba and jellyfish, all through the gamut of the worms, starfishes and insects of the invertebrate world. The beautiful photographic illustrations and lucid drawings are the finest we have ever seen. Altogether, it is a book to own.

FEATHERS AND FUR ON THE TURNPIKE, by James R. Simmons. Christopher Publishing House, Boston, Mass. 148 pages. Illustrated. Price \$1.75.

In this book, wildlife conservation is given a new slant, at least to the average reader, for it shows the hand of man in the extermination of wildlife—not in the woods but on the highways. It includes the specific results of a ten-year study of the birds and mammals killed by cars on the highways—how many, when, why and where. Every automobile owner should read it, and conservationists, hunters and fishermen, foresters and all who love the wild things of the woods—that

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these wildlife casualties may be stopped, or minimized.

DESERTS, by Gayle Pickwell. McGraw-Hill Book Company, New York City. 174 pages. Illustrated. Price \$3.50. And it is well named, for between the covers of this book is set down all that needs be said about deserts. We learn that, contrary to the general conception of deserts as dead, monotonous regions they teem with living things, making a stubborn fight for life and assuming strong and beautiful forms because in their struggles they meet the sternest and most uncompromising natural conditions. How these obstacles are overcome and life persists is originally and beautifully told and the photographic evidence is furnished by sixty-four magnificent full-page illustrations of desert forms of plant and animal life. The author, who is professor of zoology at San Jose State College in California, has made real contribution to the literature in "Deserts."

AMERICA BEGINS AGAIN, by Katherine Glover. Published by Whittlesey House, McGraw-Hill Book Company, New York. 382 pages. Illustrated. Price \$3.75.

From the first line, this book holds the reader's interest—the story of America and what she has done with her natural resources in the past down to today, when she is beginning again,—making a fresh start, through the new conservation movement. The sorry picture of what happened to our soil, our waters, our forests and wildlife the author traces vividly against the hopeful backdrop offered by conservation of today, as America begins again, with strong hope, to build back her lost empire. Tremendous things are possible, as she forges ahead with her new projects for planned use of the soil, power development and planned regional economy. That America is truly beginning again is the inspired

belief of the author, and her work presents a wealth of new, factual information. It has been well spoken of as a worthy complement to Stuart Chase's arresting work, *Rich Land, Poor Land*.

Effects of Fire on Forests—A Bibliography. Compiled and annotated in the U. S. Forest Service, Wash., D. C. *Grow Green Gold*, by A. G. T. Moore. Southern Pine Association, New Orleans, La.

Conservation and Game Management Work in Northeastern Iowa. National Youth Administration, N.Y.A. Work Projects 2130 and 3158. Dubuque, Iowa.

Statistics of Forest Products in the Rocky Mountain States, by R. V. Reynolds and A. H. Pierson. U. S. Dept. of Agr. Statistics, Bulletin No. 64. Supt. of Docs., Washington, D. C. Price 10 cents.

Water Pollution in the United States—Third Report of the Special Advisory Committee on Water Pollution of the National Resources Committee. House Document No. 155. Government Printing Office, Washington, D. C.

Poison Ivy, by James B. McNair. Field Museum of Natural History, Chicago, Illinois. Price 15 cents.

Forest Fire Insurance in the Northeastern States, by H. B. Shepard, U. S. Forest Service. Dept. of Agr. Technical Bulletin 651. Supt. of Docs., Washington, D. C., price 10 cents.

Stumpage Prices of Privately Owned Timber in the United States, by Henry B. Steer, U. S. Forest Service. Dept. of Agr. Technical Bulletin 626. Supt. of Docs., Washington, D. C., price 20 cents.

No Idle Acres. Pennsylvania Division of the West Virginia Pulp and Paper Company, Tyrone, Pa.

Forests and Forest Industry, by Robert B. Goodman. Reprinted from the Winter, 1939 edition, Harvard Business Review.

Small Refuges for Waterfowl. Third edition. More Game Birds in America Foundation, 500 Fifth Avenue, New York City.

Forestry Facts About the Tennessee Valley—a preliminary summary of factual data on the extent, character, value and use of forest resources of the Tennessee Valley. Tennessee Valley Authority Forestry Bulletin No. 2.

Native and Adapted Grasses for Conservation of Soil and Moisture in the Great Plains and Western States, by M. M. Hoover, Soil Conservation Service. Dept. of Agr. Farmers' Bulletin No. 1812. Supt. of Docs., Washington, D. C., price 10 cents.

Fire Control Notes—A Quarterly, April 1939, Forest Service of the U. S. Dept. of Agr., Supt. of Docs., price 15 cents a copy or 50 cents a year.

The Management of Farm Woodlands in New Hampshire, by Kenneth E. Barraclough. Extension Bulletin 55 of the University of New Hampshire Extension Service, Durham, New Hampshire.

## Forestry in Congress

(Continued from page 425)

The Office of Grazing receives \$1,000,000, while public lands outside of grazing districts will have \$60,000 for range improvements. Forestry operations on Indian reservations are financed with \$501,500, of which \$50,000 is available for fire suppression. The Biological Survey, transferred to the Department of the Interior on July 1, is increased by \$165,351 to a total of \$4,053,691.

With Congress working toward early adjournment action is doubtful on bills dealing with the proposed Kings Canyon National Park or control of stream pollution, both of which are granted special

rules. The less controversial Lea bill, to authorize annual appropriations for white pine blister rust control, may get action, but S. 228, to increase the authorization of \$2,500,000 for cooperative fire protection under the Clarke-McNary Law to \$9,000,000, will remain uncompleted. The Bureau of the Budget denied it clearance pending recommendations by the Congressional Joint Committee on Forestry. The prospect that no report will be made before next year promises to carry this bill over until January, 1940, when this same Congress will convene for its second session.

## Chicago's Foresters Fight Fire

(Continued from page 402)

put it out all spell the difference between serious and negligible damage. Time is the vital factor. Destruction increases, not in direct ratio, but as the square of the elapsed time.

The Forest Preserve District is divided geographically, and for administrative reasons, into seven divisions, each a complete maintenance unit. During seasons of extreme fire danger each division patrols its miles of highway frontage as constantly and as intelligently as is practicable with an inadequate personnel. Employees and selected non-employees living as caretakers and tenants in strategic locations within the preserves are furnished with telephones. Nearby farmers, gasoline station operators, highway police and maintenance patrolmen, village fire and police departments, and all suburban telephone exchanges are supplied with printed cards telling them whom to call—without charge—in case of fire or disturbance.

Many are supplied with one or more of the simplest fire tools—the flapper—which is made by attaching a piece of old rubber belting to the end of a five-foot handle. The flapper is used to beat out or smother a ground fire. Each field headquarters and each fire truck is equipped with a number of flappers and several knapsack spray pumps. These pumps, each having a five-gallon tank of water, are carried on the backs of the fire fighters and quench with water what the flapper can't handle.

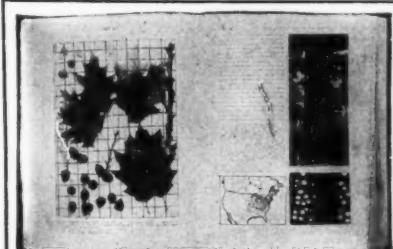
Hand tools require men to use them—willing men under trained supervision. Since 1933 from ten to twenty CCC camps have been located in the preserve, at least one in each division, engaged in forest protection and recreational development work. Their trucks, equipment and manpower have been available day and night for fire patrol and suppression. They have assumed a considerable portion of the burden, particularly after normal working hours and on Sundays and holidays, the periods in which the majority of fires occur. As a result, although records show an increase in the number of fires

during seasons of unusual drought, the average extent and the damage inflicted have been remarkably small.

These prolonged droughts have demonstrated that, even with plenty of manpower, the flappers and knapsack spray tanks should be supplemented by constant patrol and by lots of water efficiently applied. Lacking man-power this is imperative. It is imperative though we do not have the dreaded crown fires of the coniferous forests, but only grass and brush fires that seldom get far into the hardwood timber. Our timber is slow-growing and precious. The loss of 100 acres is a disgraceful calamity.

Despite the danger signals so plainly flaunted, it required the just criticism of trained observers from the National Park Service and the Forest Service to prod us into active steps toward securing modern equipment and a comprehensive, detailed fire-control plan. Pumper trucks, especially designed, and devoted solely to fire suppression were built and put into service. A fleet of fast patrol cars is being purchased. Fire schools and drills were held in each division and a plan of fire patrol and fire control perfected. Mounted patrols have been established on some of the trails. Fire towers, even if more than a hundred feet high, would be of little value because of the flat topography and the fact that much of the preserve lies in long, narrow bands along the water courses, and where nothing restrains private property-owners on adjacent lands from burning what, as, and when they see fit.

New fire trucks have recently been assigned each division—trucks resulting from much research and thought, especially built to cope with the forest's peculiar conditions. Each truck carries a 200-gallon tank of water, eight men, an auxiliary turbine pump, and compartments full of knapsack spray tanks, flappers, tools and hose. Fully loaded it will travel forty-five miles an hour over the highways; it will cross ditches, plough through soggy fields and climb the steepest hillside



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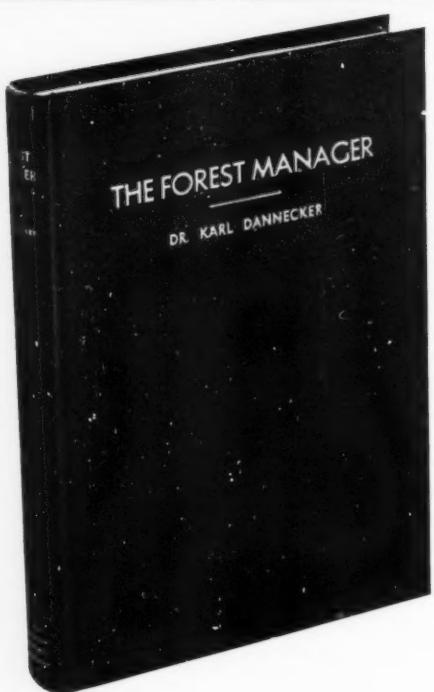
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with deceptive ease; or it will crawl at two miles an hour alongside a grass fire while its hose streams go into action. The one-inch hose nozzles, with which the truck is equipped, are also something new. They are adjustable to deliver a long, straight stream at high pressure or a cone of finely-divided water particles capable of blanketing and smothering fires of great intensity with a minimum of water consumption. With this truck and the new "fog" nozzle, the driver and one helper can handle many fire calls.

We will always have fires. That is one of the penalties for bucking the current of "civilization" and attempting to maintain a semi-wilderness for public enjoyment in a metropolitan area. By unflagging vigilance and an intelligent combination of methods their extent and destruction can be minimized. The results are already apparent. Certain woodlands from which fire, grazing and the ax have been excluded for six consecutive years have resumed the appearance of native forests, thick with underbrush, seedlings and thrifty saplings, carpeted with leaf mold and rotting vegetable matter, beautiful with a profusion of wild flowers, amazingly alive with animal and bird life.

All this within ten miles of the fifth largest city of the world.

### Roman Agriculture

*(Continued from page 409)*

thorny shrubs which had accumulated the blowing soils, forming hummocks. On the basis of these findings, experimental plantings of olive trees were made in this region. They were successful and during the past forty years several hundred thousand acres of olive orchards have been planted. Sfax is a thriving city built on the new olive industry. Modern olive presses have been established and on the highway one meets large trucks, loaded high with barrels of oil. However, one portion of this general area has been destroyed by such excessive labyrinths of gullies that its utility for any cultivation has gone forever.

There is one lamentable feature of all this modern planting. The trees have been planted in straight rows, up and down the slopes, regardless of topography. Already erosion has taken its toll. In places the surface of the orchard is covered with erosion, or desert pavement. We saw gully erosion in action. The raging storm runoff was carrying away the soils as they cut numerous gullies through the orchards. In other places sand dunes of considerable size were growing; evidence that both wind and water erosion are already serious problems in this extensive project. This problem might have been avoided if modern plantings had followed the old Roman method. In view of the fact that olive trees, when protected from man and his ax, often live many centuries, contour planting and erosion control methods are especially needed in this modern project. When I drew the attention of French

agricultural officials to this, they agreed with us. They were not sure if the French colonials could be induced to plant on contour instead of in straight rows up and down slopes. Contour plantings would be an improvement over the Roman basin method, to suit modern methods of cultivation.

The ruins of old Roman aqueducts, many hundreds of miles of them with their manifold arches, stretch like elevated bridges across parched landscapes. Roman towns and cities were always located to take advantage of nearby streams or springs, or even many miles distant if aqueducts could be made to bring water supplied by gravity flow to the city. Some of these aqueducts were magnificent works of engineering. If the city was large, more than one aqueduct and water supply was provided. These flowed constantly and emptied their waters into reservoirs for storage in or near the city. We found that running water into individual city houses was customary. Tingad, a city of 25,000 population had twenty-two public baths. Bathing was an elaborate ritual with the Romans and required large supplies of water. Public latrines were provided with sanitary flushing systems.

We found a number of instances where the Romans transported waters through underground tunnels to avoid evaporation. We also found where they had dug wells and connected them with tunnels in order to increase the water supply by tapping larger areas of seepage. This likewise prevented loss by evaporation during long dry spells. It was noted that inscriptions gave credit to this or that Emperor for aqueduct or irrigation projects, indicating the attention and importance placed upon the development and conservation of water.

Roman footprints, in the form of cisterns, have been left by the thousands all over North Africa, extending from the coast far out into the desert on camel caravan routes. Many of these cisterns are now being used; others are being cleaned out and repaired. One is apt to find a cistern in any spot which gave promise for the accumulation of rain waters, whether for irrigation, village supply, or for herds.

Cisterns are of all sizes, from small ones of a few gallons capacity to huge cisterns of 250,000 gallons. Many of these larger ones are provided with a desilting basin and a spillway. I visited one huge Roman cistern at Mergueb, fifty miles south of Tebessa, with a capacity of 210,000 gallons. It had been covered with a roof and repaired to supply water for herds.

Underground water tables in the lowlands appear to be unchanged since Roman times. Roman wells, in the lowlands of widely separated areas, which have been cleaned out and repaired, give evidence that the water level today is almost identical with that of two thousand years ago when the wells were dug and faced with stone.

The Romans were also masters in the art of stone or earth terracing. Whether this originated with them or with the ancient Phoenicians is not yet clear. But they extensively practiced terracing

for agriculture and olive groves is certain. South of Tebessa we found a system of check dams and terracing on the slopes facing the Sahara. One dam, long since broken, measured 110 feet on the crest and twelve feet in height. In the vicinity of Sbeitla is an elaborate system of check dams and terraces, extending up to the tops of the mountains for the culture of the olive and grains. These works were followed out to the valley floor where, though in a state of partial ruin, they still serve to aid the Arab in barley culture. Perhaps the maximum development of terracing dating from Roman times is to be found in the Grand Atlas Mountains in Morocco where the slopes are terraced in elaborate detail by the Berbers.

We have seen numerous "karms" or artificial earthen mounds in the northern Lybian region of Egypt, which contains many Roman ruins. These "karms", built in connection with enclosures, appear to have been constructed to add the run-off from their slopes to gardens in enclosed area. These enclosures are still in use for Arab barley fields.

Thus today, after from fifteen to twenty centuries, we have found various footprints of Roman occupation in North Africa. We have seen her temples and gods; her coliseums; her slave markets where human beings were bought and sold to labor, that Roman masters might live in luxury and leisure; her aqueducts and elaborate baths; her paved roads of commerce in areas sometimes now devoid of populations; her public works and remains of agricultural conservation structures which were made of stone, and are still visible after centuries of marauding invaders.

Cato wrote that if one wished to compliment a Roman, he should be spoken of as an "agriculturalist", but they were "gentlemen farmers" who studied the times and seasons and methods for planting, but ordered slaves to do the work. The extent to which they recognized the wastage of erosion is not known, but Roman footprints visible today reveal an extensive and detailed knowledge and practice in the control and use of little waters, and the conservation of soils. But we have also seen how all these measures and works can be destroyed by man until productive lands are transformed into man-made deserts—deserted except for Bedouin nomads and their herds.

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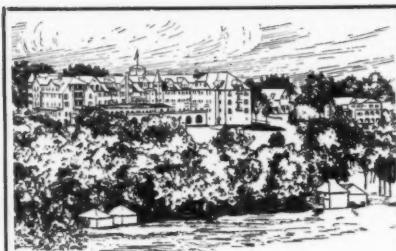
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## Wildlife in Gotham

*(Continued from page 406)*

park authorities or the Ice Age. From behind this shelter a bob-white whistles. But as you tiptoe near he takes off on broad, rounded wings. He takes refuge in the bird sanctuary, a fenced-in tangle of trees and shrubs of those varieties that furnish food for birds. When he has recovered his poise the bob-white whistles from this retreat. You answer very creditably, you think. Evidently he thinks so, too, as he continues his end of the conversation.

In a rocky retreat in Alley Pond Park a silver fox lives. And how many country places can claim a silver fox for a neighbor? A cottontail rabbit sits erect with nervous nose and ears alert to watch a cavalcade of horseback riders pass by.

Northward along the Hudson is Inwood Park, whose gigantic tulip trees, sweet gum and plane trees are the self-same ones under which Audubon used to roam in those last days at Minnie's Land, his home overlooking the Hudson—just a few blocks below at 157th Street. Minnie's Land and miles above it now is solid concrete and stone—except those acres saved for recreation.

In the favorable environment of Inwood Park birds abound and wild flowers and weeds flourish together. Here the sparrows gather—field sparrows in the open spaces, song sparrows in every tree and bush. Across the Hudson vesper sparrows conduct their evening services as the sun sets.

Central Park in winter, as well as outlying parks, affords refuge to strange creatures. The snowy owl, longspur, and snow bunting from the Arctic region are not unknown. Ducks and geese from northern Canada often migrate this far, and for their own reasons go no farther. Perhaps, after all, it is not a bad idea, this wintering in New York City, with park attendants to keep the ice open on the lakes and daily rations of grain, supplemented by popcorn, peanuts, and bread crumbs from a sympathetic public.

During the seasons of migration New York City becomes a bird city. Like delegates to a convention the feathered visitors converge upon the city from many directions. New York is situated near several major migratory routes and for centuries the seabirds, the marsh and shore birds, the land birds, have passed over the region of seashore, swamp, woods and fields that is now Gotham. The habit of a million years or so is not easily changed, so the birds continue to fly over the area to their nesting grounds to the north, or their winter resort in the south. After a day or night of flying they stop to rest among the greenery of Central Park as well as those pleasant places farther removed from confusion.

On a hazy September day the observer in Central Park sees an army of hawks fly leisurely over the city—just skimming the tops of the tallest buildings. All afternoon they pass, at the same rate of

speed in groups of from ten to fifty. Sometimes they fly in a continuous procession, at other times the company ahead will have disappeared before the next contingent hoves into view—but following after and as undeviating from the aerial path as though it were a ribboned highway. Down below among the arrowwoods and cedars of Central Park, slate-colored juncoes, kinglets and warblers seek refreshment after a long journey.

For time unknown Central Park has been a favorite stopping place with warblers, particularly that rugged section of the park where huge outcroppings of rock rise like a miniature mountain chain, with valleys and rivulets between. In the spring when the paths are decked with azaleas, this section, known as the "Ramble," is colorful with the golds, greens, orange and blues of the warbler throng,—while orioles, tanagers, rose-breasted grosbeaks, Indigo bunting—birds of every hue and kind—convert the park into an avian camp meeting. Nearly two hundred varieties of birds have been listed in this small space in the heart of the city.

Only a few days they tarry before resuming their journey. But there are new arrivals to be noted on bird calendars and focused in the binoculars of the bird fans who are almost as numerous in the park on an early spring morning as the birds themselves.

In Madison Square Park, that small oasis at the intersection of Broadway and Fifth Avenue at Twenty Third Street, the whistle of the starling sounds above the honks of the motor cars.

As winter draws to a close the New York Boy Scouts set out to find the first sign of spring. And they usually grant it to the skunk cabbage, that malodorous harbinger of spring that rises above the swamp of Van Cortlandt Park. This swamp is a famous rendezvous for birds, and almost as soon as the skunk cabbage thrusts its nose above the oozy ground, the red-winged blackbirds arrive with great to-do of flashing red and orange shoulder bands and musical calling of "Ok-a-lees". It is a favorite resort, too, with the marsh wrens and Maryland yellowthroats that build their nests among the cattails and marsh grasses and raise their families within hearing of the golfers' "Fore!" from the greens on the east.

The Van Cortlandt swamp has been found to be one of the most populous bird centers—birds per acre—in the United States. Here one may sit upon a mossy-stuffed stump and watch the spring parade. Kingfishers chase each other about, uttering their rattling ery that sounds like the fun-making contraption that people twirl at fancy dress parties. Pheasants scoot through the air just above one's head, and crows flap lazily over the swamp, across the motor road, and off in the direction of the picnic grounds. In fact, one may never be surprised at any bird that he sees here-

# Thank You!



Dear Members—

We'd like to write each of you a letter to say "thank-you" for your whole-hearted support of your Association's Fire Prevention Campaign. Since that is an impossible task, we are using this page to tell you what you have accomplished.

Your active interest in the Fire Campaign is demonstrated by your purchase and use of over 107,000 of the James Montgomery Flagg Poster Stamps. This means that 107,000 people all over the country are getting a letter, a package, a postcard, a bill or a check, carrying an urgent message from you in the form of a poster stamp—a message that makes each one think before he tosses aside his lighted cigarette or leaves a campfire or commits any one of the careless acts which are responsible for most of our fires. Actually your message is reaching many more than the 107,000 who receive the stamps for they pass through many hands along the way, in transit and in the office or home to which they are destined.

Many of you have also secured the cooperation of local clubs, chambers of commerce, and newspapers. Business firms such as lumber, paper, fire insurance and tobacco companies have given substantial support to the campaign, using the stamps on everything from pay envelopes to shipping cartons. These stamps added to the 107,000 used by members bring the total of stamps distributed very close to 500,000. This means that at least two million people have seen your fire warning during June and July—an accomplishment of which you should be proud.

But the fire season is not over—August, September and October are still hazardous—so don't relax your efforts too soon. Be sure that the people in your town, the men you do business with, your friends who are taking motor trips, are warned of the damage they might do by some small carelessness. Remember that if you can make them think about fire prevention they will practice it!

With best regards,

*James Stillwell Elmer*

President.

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**Index to  
ADVERTISERS  
August, 1939**

	PAGE
Allan Ranch	421
American Telephone & Telegraph Company, The	2nd Cover
Austin-Western Road Machinery Company	4th Cover
Bartlett Manufacturing Company	423
Bausch & Lomb Optical Company	419
Beebe Brothers, Inc.	427
California Spray-Chemical Corporation	423
Caterpillar Tractor Company, The	387
Chelsea Hotel	429
Daniels, E. M.	427-429
DuMaurier Company	421
DuPont & Company, E. I. de Nemours	417
Eagles Mere Hotels Corporation	430
Evinrude Motors	419
Feehheimer Brothers Company	425
Forest Service Company, The	427
Galion Iron Works and Manufacturing Co.	421
Herbst Brothers	423
Hough Company, Romeyn B.	427
International Harvester Company, Inc.	415
Keene Forestry Associates	423
Knapp Company, Fred C.	425
K. and W. Rubber Corporation	421
Loring, J. Alden	429
Mears, A. H. G.	421
Pacific Marine Supply Co.	425
Randolph, L. F.	427
Smith & Company, D. B.	425
Western Maine Forest Nursery	423
Weyerhaeuser Sales Company	3rd Cover

abouts, whether snowy owl from the Arctic, or adventuring egret from southern United States.

A few years ago a glossy ibis that had somehow wandered up from its home in southern Florida created considerable stir among ornithologists and New York bird people during its stay in the swamp. Such visitors attain quite a bit of publicity, being heralded in headlines in the metropolitan papers. The woodcock that flew in an office window of the General Motors Building at 57th Street and Broadway last spring was photographed and interviewed by reporters like any celebrity arriving in the city.

So, what with eagles and peregrine falcons flying over the city, silver fox housekeeping in one of the parks, and a woodcock sailing in 57th Street windows—and perhaps lions on Fifth Avenue—there is no lack of wildlife in Gotham.

**When It Rained Salt Water**

(Continued from page 414)

miles of the ocean I do not know the inland extent of this damage but certain easily accessible areas show the outer foliage badly browned. Nature surely reacts in almost unpredictable ways. Here is a tree, which only occurs within a few miles of the ocean, badly damaged while the Colorado blue spruce, a tree from the top of the Rocky Mountains, is almost immune to wind driven salt.

The spring growing season showed the same erratic damage to hardwoods within a few miles of the shore. The foliage was delayed through the buds having been killed, smaller limbs were dead and when new growth on the damaged trees did appear it was two or more weeks late. The new growth is often almost entirely sprouts along the main trunk and branches. The most resistant hardwood is the horse chestnut and the least resistant is the tulip.

The real cause of the damage has not been tested as yet. Even the exact sequence of events is somewhat hazy. The magnitude of the storm, its rapid movement, the differences in wind directions and the amounts of rain were not recorded. White pine submerged by tide water did not brown either from the salt water on the needles or from salt bath of their root system. However, where the needles were above tide water, the browning was complete. This may indicate that force of wind blowing the salt impregnated water into the stomata was the cause of the damage. Then again, the strong westerly winds without rain which followed the storm may have caused excessive evaporation. This might have intensified the effect of the salt upon or within the needle. Damage of similar character has been noted in the past on new growth along ocean fronts. This, however, is the first opportunity to see what a real hurricane can do with wind blown salt in New England. Personally, one opportunity is enough.

**WHO'S WHO**

Among the Authors in This Issue

GRACE ERNESTINE RAY (*I Wanted to Herd Cattle*) is an Oklahoma girl, reared on a ranch. Graduating from the University of Oklahoma, she taught journalism there, is now free lance.

HENRY CLEPPER (*What Is Your Favorite Tree?*) is a Pennsylvanian and served his state in many branches of forest work before coming to Washington in 1937. Always an interesting writer, he raises here a question of wide appeal, and answers it, for some outstanding folks.



Grace E. Ray



Ethel Severson

ETHEL SEVERSON (*Treasures of the High Sierra*) — of Norwegian descent, was born in Minnesota but, she says, converted to California. Writing and skiing consume most of her time outside the Paramount Studios.

ROBERTS MANN (*Chicago's Foresters Fight Fire*) is the active superintendent of maintenance of the Cook County Forest Preserve, where they have been pioneering in fire suppression and control methods in a forest lying at the doorsill and within the great metropolitan area of Chicago.

LORINE LETCHER BUTLER (*Wild Life in Gotham*) goes interestingly afield in this, for she likes most to write and talk about just birds. A Kentuckian in New York, she writes refreshingly on nature subjects.

GLORY E. SCOTT (*Forest Fire*). Descended from a line of Welsh poets and musicians, Mrs. Scott, who lives in Portland, Oregon, writes of the genesis of this poem—"We were motoring the day the great Tillamook fire started and saw it start, to our horror and dismay. I commenced this poem while riding on a logging train, through what is now represented only by this great burn."

W. C. LOWDERMILK (*Footprints of Roman Agriculture*)—soil expert, continues presenting evidence he reads in North Africa today on the part soil destruction probably played 6,000 years ago in the crumbling of the great Roman Empire.

EDWARD P. CLIFF (*Baker River Salmon Take a Ride*) is a forester with a penchant for wildlife.

A. E. MOSS (*When It Rained Salt Water*) is Professor of Forestry at Connecticut State College, Storrs, Connecticut.

THE COVER—"Gulf Vista" is another of John Kabel's beautiful photographs.

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